Essential Energy
Cost pass through application
2019-20 Bushfires

September 2021

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Executive Summary

- The 2019-20 bushfires were unprecedented in terms of their severity and impact on the environment and communities, and parts of our electricity network across the east coast of NSW were severely damaged.
- Essential Energy anticipates that the damage will cost an extra $75.2M to repair and restore the network as a result of these fires, which were outside of our control. These costs would not have occurred but for the multiple bushfires during 2019-20.
- The majority of this amount has already been spent, but some future expenditure will also be required.
- These costs are material for Essential Energy and were unforeseen - funding was not included in the revenue allowances for the 2019-24 regulatory period, that the Australian Energy Regulator (AER) approved for us in April 2019.
- Essential Energy is requesting an extra revenue allowance of $33.8M to cover these unexpected costs.
- We are requesting that the shortfall in allowance is recovered from customers over a two-year period (from July 2022 to June 2024), as this was preferred by our consumer advocates. For each of these two years, this is expected to cost a typical residential customer $12 extra a year and for a small business customer it will cost an extra $46 a year.

1. The 2019-20 bushfire season

Throughout the 2019-20 bushfire season over 10 million hectares of land was burnt across Australia. More than 3.4 million hectares was burnt in Essential Energy's network area alone – this was more than 60% of the total firegrounds across the whole of New South Wales (NSW). The Commonwealth Scientific and Industrial Research Centre (CSIRO)[1] has explained that this season was so significant because of weather and vegetation as contributing common factors.

Weather

Southern and Eastern Australia experienced record low rainfall levels and record high temperatures in 2019. Combined with strong winds, the low humidity and high temperatures generated what is known as 'fire weather'. The CSIRO also made it clear that the climate conditions, preceding and during the NSW bushfires, gave rise to a more severe bushfire risk than usual across all of, or a significant proportion of, NSW. None of the major fires in 2019-20 were caused by Essential Energy.

In extending the bush fire danger period to start on 1 August 2019 (rather than the statutory 1 October), the Acting Commissioner of the NSW Rural Fire Service (RFS) stated that 'conditions across the state are drier and warmer than average, with more than 98 percent of NSW drought affected'.

In addition, the Bureau of Meteorology (BOM) stated in September 2019[2] that fire risk was driven by fire weather and fuel availability, and rainfall is a key component of fire weather risk indices such as the Forest Fire Danger Index (FFDI). The BOM confirmed in December 2019 that by spring 2019, the FFDI accumulated values were above average (with more than twice the average across most of NSW)[3].

The 2019-20 bushfire season had a more severe risk than expected due to below average rainfall from January to November 2019, low soil moisture (June – August 2019), very much above average or highest on record temperatures across all of NSW (from January 2019), and very much below average to lowest on record humidity across all of NSW (Spring 2019). During 2019 Eastern Australia was also impacted by weather patterns in the Indian Ocean and Southern Ocean.

[1] The 2019-20 bushfires: a CSIRO explainer Link

[2] BOM Special Climate Statement 71 September 2019 Link

[3] BOM Special Climate Statement 72 December 2019 Link

Vegetation

The multi-year drought and continued low rainfall meant that the vegetation was extremely dry and led to intense fires.

The fire weather and dry vegetation during the 2019-20 bushfire season, combined with sources of ignition, such as lightning or flying embers, caused major and widespread bushfires across NSW and other Southern parts of Australia. When fires were large enough, they in turn, caused their own weather events such as lightning and fire-storms.

Natural disaster event

The NSW Government made a Natural Disaster Declaration for the North Coast Bushfires from 18 July 2019 onwards, and for the NSW Bushfires from 31 August 2019 onwards[4]. The definition of a natural disaster, in the NSW Government Disaster Assistance Guidelines, state that an event needs to have caused serious disruption (among other things) but it also expressly contemplates a combination of events (such as multiple bushfires) that cause a single serious disruption. Given the loss of life and property from the unprecedented bushfire season, in 2020, the NSW Government undertook a Bushfire Inquiry[5], and the Australian Government held a Royal Commission into National Natural Disaster Arrangements. Essential Energy provided submissions to both of these reviews – see Attachments B and C.

Single natural disaster event

In addition to relying on the declaration of a single natural disaster event, Essential Energy has also classed the 2019-20 bushfire season as a single natural disaster event due to the multitude of bushfires as having a common cause (weather and drought, as discussed above). This was based on initial advice received from the AER, which was supported by independent legal advice. However subsequent to this understanding, TransGrid's approved cost pass through application for the 2019-20 bushfire season (May 2021), was somewhat reduced due to the AER splitting their TransGrid's request into different fire events, based on time and location.

The impact of the multiple fire events over the bushfire season meant that Essential Energy undertook a holistic network response with employees assisting from right across the State, as fires occurred. The NSW Bushfire Inquiry and the RFS [6] confirmed that the greater majority of the bushfires burned over the same time, e.g. large fires in the North such as the Carrai Creek, Carrai East and the Rumba Complex burnt from October until they were finally extinguished in mid to late January. This coincided with significant fires across the South of our network that began in December 2019 and continued through to February 2020.

2. The bushfire impact

Given that 80% of our network is in bushfire prone areas, bushfire risk management is a key focus for our business. However, in the past this has been about how we manage and operate the network to minimise the risks that we could initiate fires with our work practices or assets. The 2019-20 bushfires have pivoted our attention going forward to also include how our network can be more resilient to bushfires as an effect of climate change in the future. We explain this more in section 4.4.

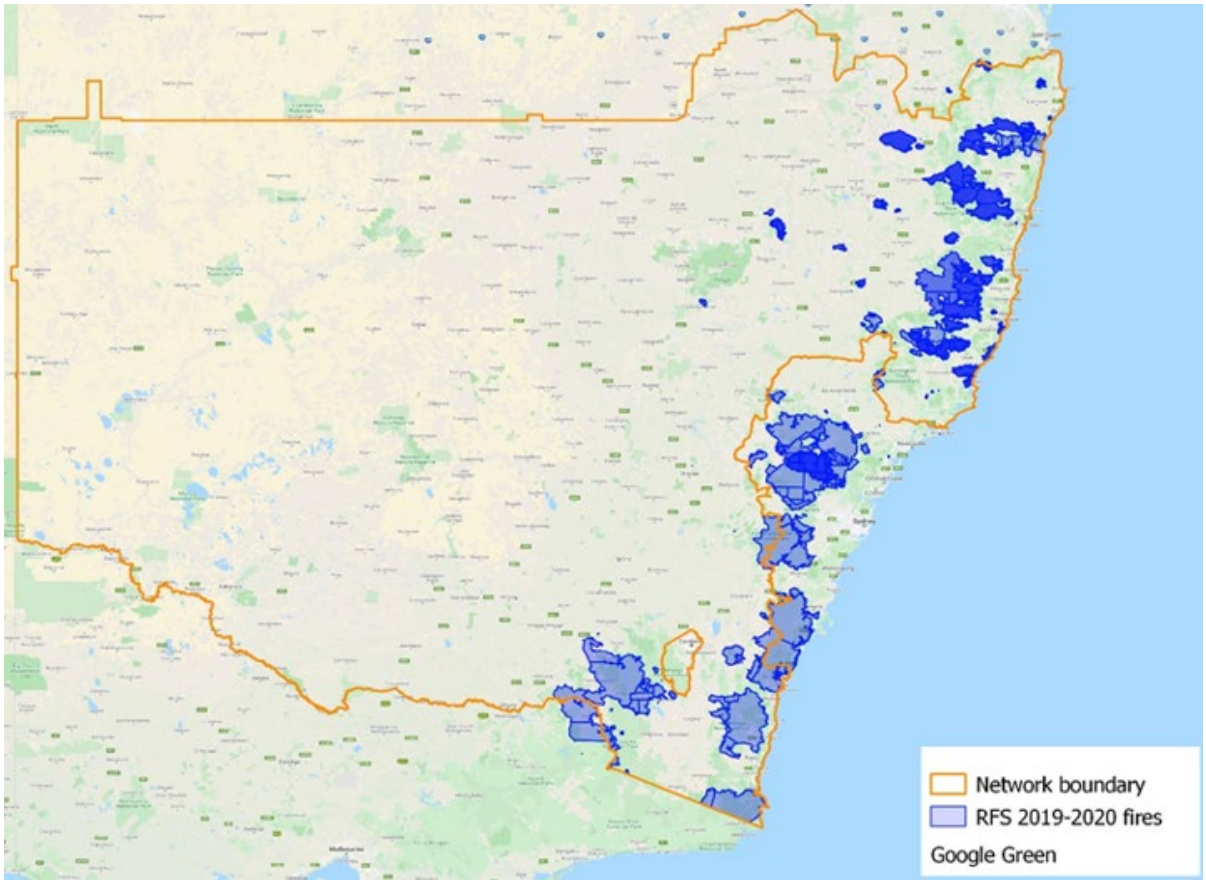
The map below in Figure 1 shows the extent of the firegrounds across NSW during 2019-20, overlaid with our network boundary, and illustrates the impact of the fires on our network over the course of the bushfire season. The longest running fire in NSW started near Port Macquarie in July 2019 – this was not extinguished until heavy rainfall in mid-February 2020. From September 2019, multiple and concurrent fires began causing significant impacts and costs to our network in the Northern regions and this continued into January 2020. The Southern areas of our network were affected from December 2019 through to February 2020.

[4] NSW Natural Disaster Declarations Financial year 2019-20, AGRN 871 & 880 Link

[5] Final Report of the NSW Bushfire Inquiry Link

[6] RFS Bushfire Bulletin Volume 42, No. 1 (2020) p.6 Link

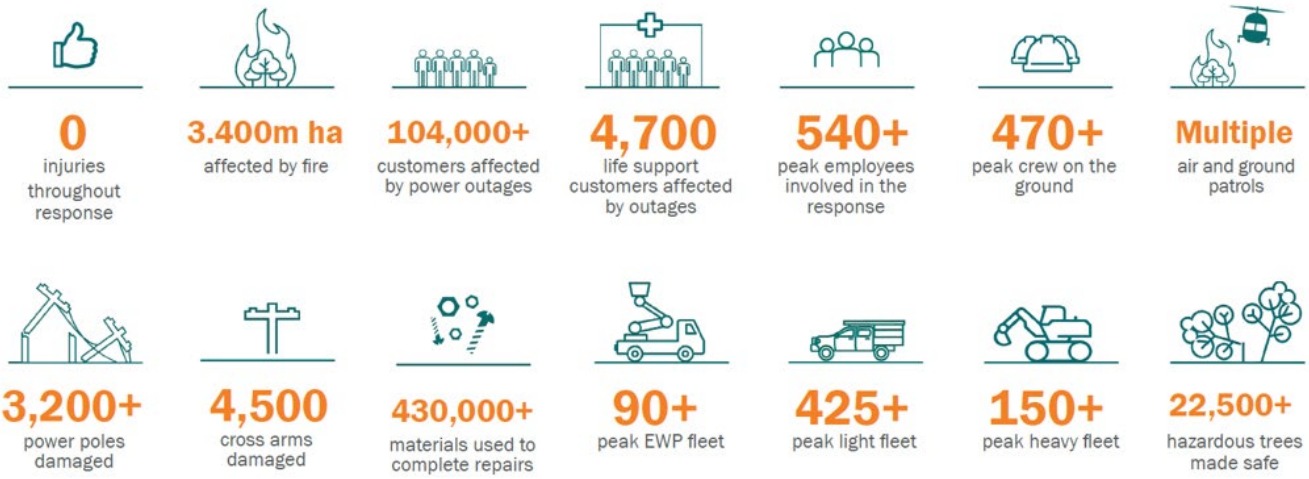
Figure 1: Map of the 2019-20 bushfire impacts on Essential Energy's network



Up until 2019-20, infrastructure losses for our network, due to natural disasters such as bushfires, storms, and floods, had been relatively small as a percentage of total assets and were quite manageable in terms of impact on our business, customers, and communities. Any repairs or reconstruction were typically completed within a relatively short period of time (most restored within a few days as a worst case) and within normal fault & emergency budget allocations. However, the extensive damage to the electricity infrastructure and loss of assets (mainly timber poles) due to the 2019-20 bushfires is vastly different from this norm, setting new records for volumes of assets damaged or destroyed in one specific fire season.

The infographic in Figure 2 below provides relevant statistics that demonstrate the scale of the immediate impact of the 2019-20 bushfires on Essential Energy, and why the costs are too great for our business to cover within the current allowed revenue from the AER.

Figure 2: 2019-20 consolidated bushfire statistics for Essential Energy – as of February 2020



3. Our bushfire response

In the aftermath of the multiple and concurrent bushfire events over 2019-20, our crews worked tirelessly to restore power supplies to customers. Our priority was always safe and steady power restoration. It was important that the appropriate time was taken to fully assess conditions, particularly hazard trees, and undertake any necessary work safely to minimise the injury risk to our people or members of the public. Burnt timber poles needed to be handled with caution as they could release toxins as well as dangerous vapours and ash. Falling trees and branches were an ongoing hazard in the aftermath of the bushfires, as were extremely slippery conditions when rain and ash combined. Our daily safety briefings took on a greater level of importance, as the team worked to ensure restoration efforts remained injury free throughout the season.

Priority was given to restoring power supplies for critical services in bushfire-affected areas, including communications infrastructure, water and sewerage pumping stations, hospitals, nursing homes and petrol stations.

We continued to work collaboratively with the RFS and other authorities to provide alternative power generation to emergency centres and critical infrastructure, which was crucial to assist the community during the emergencies. Some crews also worked with the RFS and Telstra to provide generation for communications towers to help restore phone and internet coverage where possible. Essential Energy also worked with the State Emergency Services (SES) and Roads and Maritime Services (RMS) to clear damaged network assets and trees from major roads to ensure they could be reopened as soon as possible

The first bushfire to significantly impact on our network began in September 2019 with the Long Gully Road fire in the area around Drake. A fierce fire then moved through Rappville and the surrounding areas on 8 October 2019, causing extensive damage to property and the electricity network. The Rappville Fire burnt more than 40,000 hectares and joined with the Drake Fire which had already burnt over 70,000 hectares. The network damage from this fire was significant, despite only affecting 430 customers - more than 400 burnt poles needed to be replaced in that area, and over seven kilometres of line needed repairs and replacements. Power began being restored to the town after three days – we provided a generator at the local school which became the local emergency centre and worked closely with the RFS for the duration of the response. Crews (from 30 depots) from Bulahdelah to Tweed Heads and west of Inverell

were mobilised to assist in the recovery effort, along with fleet and vegetation staff. We sourced all food and water locally to support local businesses.

Lightning triggered further fires in October and from November 2019 an unprecedented number of severe bushfires were burning, impacting 67,000 customers at their peak. We established operational hubs in depots central to the major fire areas, namely Taree, Grafton, Port Macquarie, Kempsey and Nambucca. They were resourced to provide support and logistics, including safety leadership, design and planning, on-the-ground fleet management, and to ensure that all crews were looked after with meals.

Senior leaders were located in the seven established Emergency Operation Centres partnering with the RFS to ensure safe access into impacted areas to assess the network damage. Restoration was hampered due to the continuing fires, Total Fire Bans (TFB), steep and difficult terrain, and smouldering and breaking trees. Helicopters were brought in to conduct aerial patrols and assist with assessing the electrical network.

Our bushfire response efforts were continuously refined during the course of the bushfire season, with operational hubs being set up close to firegrounds and support services running 24/7 in order to restore energy supplies as soon as safely possible. The mobilisation of crews from all over NSW to assist in the response, allowed for peak resourcing but also ensured a presence remained in regional depots to deal with other local issues, such as standard fault and emergency work which continued unabated throughout the 2019-20 bushfire season. More than one third of our field facing workforce was mobilised as required. In addition, staff voluntarily returned early from leave and assistance was also provided by other NSW distributors, with equipment and operators.

Heat and smoky conditions for teams required careful rotation of crews to avoid health issues, along with planning and coordination of food, hydration, and accommodation. Mobile fleet units were deployed to hubs near firegrounds to manage vehicle maintenance and they worked overnight to ensure field crews had ongoing access to operational and provisioned vehicles. Remote locations, and fallen and smouldering trees, made working conditions challenging for our crews.

Essential Energy continued to work closely with the RFS to gain safe access to patrol the network. Where conditions allowed, extensive helicopter patrols were undertaken to assist in assessing damage to the network, as well as our Drone Specialists and Asset Inspectors also moving into the burnt areas to patrol lines alongside local teams.

A significant amount of damage was caused to the underground network in urban areas of Batemans Bay, which meant restoration was more complex and lengthier. The following underground infrastructure needed replacing:

- 170 underground service pillars
- 1 underground pad mount station
- 3 high voltage underground switching stations
- 3 low voltage underground cubicles
- Approximately 11 underground cable joints carried out including both high and low voltage cables.

3.1 Rebuilding infrastructure

The impact of the bushfire response and rectification has meant that the existing schedule of works has been pushed out into later years. $37M of work was delayed in FY20 and undertaken in FY21. As a consequence of that amount of work being too great to absorb into the FY21 schedule, $19M of the FY21 work has now been carried over into FY22. Safety and reliability remain top of mind with the re-scheduling of work.

The Nerrigundah area (inland from Bodalla) took the longest to access after the fires. This area was one of the hardest hit by bushfires on the South Coast. Most of the houses and bridges in the area were destroyed by fire on New Year's Eve 2019. Eurobodalla Shire Council took approximately three weeks to complete temporary bypass crossings and allow Essential Energy to assess the existing network structures that remained. This access was available for approximately one week, before heavy rain in early February caused flash flooding and washed away all the temporary crossings. Four residential bushfire response stand-alone power systems (SAPS) were deployed in this area to restore power quickly and allow field crews to concentrate on repairing more critical parts of the network, whilst the vegetation contractors removed the hazardous trees. Supply was restored to most of the remaining customers in Nerrigundah area by the third week in February.

More than 3,200 power poles and 4,500 cross-arms have been replaced across our network, along with using more than 430,000 materials and components such as nuts, bolts, and pole top fittings for completing repairs. However, aerial inspections commencing in July 2021 will determine how much damage is yet to be rectified, with further costs expected. We will be checking especially for defects - damaged hardware, burnt conductors, and charred Copper Chrome Arsenate (CCA) poles that were missed in initial inspections. When this type of pole is charred but not completely burnt to the point of failure, the CCA preservation can cause a possible risk to health of people and livestock. We need to identify and inspect these poles with a view to treating them with a paint product to cover the charring.

Highly populated areas of the network were prioritised to restore power quickly to as many customers as possible. However, significant parts of the network, impacted by the 2019-20 bushfires were in remote areas with difficult terrain, and long lengths of line connecting a small number of customers. Some firegrounds were not available to access safely for up to 3 weeks to even begin planning the restoration works – access to firegrounds is controlled by the RFS. Given the access issues, the restoration work therefore took longer to assess and plan than in areas that were more accessible. We also took a pragmatic approach to rebuilding in areas where there is high bushfire risk, reliability issues, and remoteness - ensuring appropriate time to review for the least-cost and best solutions for long term replacement of supply, compared to just rebuilding on a like-for-like basis (refer to section 3.1.1 below).

3.1.1 Significant restoration work

Peak Alone Communications Towers

This site is remote and located within the Wadbilliga National Park in the southeast of NSW. It was a priority site as it hosts telecommunications systems for the following parties:

- RFS
- National Parks and Wildlife Service (NPWS)
- Eurobodalla Shire Council
- Vodafone
- Optus
- RMS
- Telstra

- NSW Police
- Essential Energy is also a customer of one of the four towers on site.

Photo – The remnants of the transformer and pole that fed Peak Alone Communications towers.

The 4km power line up to Peak Alone was destroyed on 31 December 2019 and given the imperative to restore power to the towers quickly, to assist in bushfire restoration efforts, several diesel generators were put in place as soon as safely possible. It was considered a suitable site for a temporary SAPS, due to the propensity for bushfires in the area and steep terrain. Over the following month, two rapid-response units (solar panels, diesel generators and Tesla batteries) owned by Resilient Energy Collective (REC) were servicing three of the towers, with continued diesel generation at the fourth tower.

Essential Energy completed investigations to potentially transition the site to a permanent SAPS, however, long term costs are, at this stage, more expensive than reinstating a network line. Vast numbers of solar panels would be needed with continued use of diesel as backup. Essential Energy has undertaken an options assessment with the current preferred (and lowest long-term cost) option being to rebuild the line using composite poles. The cost of this option is included in this application, with further information available in Attachments D and E.

Snowy Region

The 24 km powerline between Cabramurra and Providence Portal was significantly impacted by bushfire, isolating the town of Cabramurra, the Selwyn Ski fields, and the Selwyn Communications Tower. Emergency generators were placed on-site in Cabramurra and at the communications tower.

A temporary supply arrangement has been developed with Snowy Hydro utilising an auxiliary supply from their hydro power stations to Cabramurra. Essential Energy partnered with PowerCo (NZ) to install a temporary Hybrid SAPS to Mt Selwyn, housed in a shipping container (which can be deployed elsewhere in future storm events) to supply the communications tower. The SAPS has supplied critical communications since the bushfires, which allowed Essential Energy time to investigate a more resilient network supply, and provided external customers like NSW Police, NPWS and Snowy Hydro reliable communications to safely continue post fire operations, rebuild roads and the Selwyn Ski Resort. The Selwyn ski fields are now closed until winter 2022, whilst they rebuild the resort. We have organised supply of an additional two diesel generators to support this work.

Given the strong history of large bushfires in this area, Essential Energy has been reviewing options for a more resilient network supply to the area, rather than quickly rebuilding like-for-like. Additional challenges relate to the steep terrain, extreme climate and environmental concerns for network assets within the Kosciuszko National Park.

The preferred (and lowest long-term cost) option is a new closer supply from TransGrid's Upper Tumut switching station, which includes the use of covered-conductor line and composite poles. There is also an option for Snowy Hydro to contribute to the cost of undergrounding parts of the line in the National Park. The cost of this option is included in this application, with further information available in Attachments F and G.

Photo - Essential Energy field crews access Selwyn Communications tower SAPS for maintenance during Winter 2020.

3.1.2 Deployment of SAPS

Why did we install SAPS?

Essential Energy trialled the deployment of emergency response SAPS to multiple sites on the south coast of NSW after the devastating bushfires to test the feasibility, customer acceptance and network benefits this technology provides. Many customers experienced significant loss and extended outages and the use of emergency response SAPS provided temporary power faster than rebuilding the poles and wires network.

How did we choose the customers?

In response to the South Coast bushfire events, we provided SAPS to 6 residential customers and 2 telecommunications sites which supplied multiple customers, These SAPS were provided on a temporary basis while the decision on the design and locations for permanent supplies were investigated. Feedback from residential customers show that they have been happy with these arrangements and are willing to accept a change to their power supply via a SAPS as they provide a reliable and efficient source of electricity.

6

residential customers provided with Stand Alone Power Systems (SAPS)

How did we install the SAPS?

Through partnerships with the Resilient Energy Collective who supplied 2 SAPS at a telecommunications site and Base Power NZ who provided 10 loan units for use at residential and commercial connections, Essential Energy was able to deploy SAPS quickly using local sub-contractors and internal staff.

What were the benefits of SAPS?

- Faster restoration times for customers.
- Longer planning and design time for permanent restoration, to ensure the most reliable and cost-effective solution.
- Provided safety coverage, allowing contractors time to safely assess and remove hazard trees that could impact the network.
- Reliable supply was provided by the SAPS systems when the Network was isolated during weather events following the initial implementation after the bushfires, i.e. some of these sites were flooded multiple times in the next 15 months.
- Reduced the risk of bushfires being caused by Network coming into contact with vegetation. This is especially key in high bushfire risk areas where in extreme weather and high-winds, vegetation has the potential to fall into energised lines.
- A SAPS site with onsite generation eliminates the direct impact of outages caused by upstream events, such as bushfires.
- In selecting flexible Systems, we were able to optimise to suit changing customer needs, e.g. at one site, we doubled the original battery storage so that we could maximise solar input, decrease dependency on diesel, and meet customer changing requirements.

What did we learn from the process?

- Solution selection needs to be tailored to the site and customer and allow for changing needs.
- Communications and the ability to remotely monitor the System performance is critical to ensure continuity of supply and reliability.
- Local subject matter experts or SAPS Champions are required to make initial contact with the customer, learn the site characteristics, educate and accompany the customer and the system on the journey.
- Partner selection is critical in relation to the technology and offerings available, and whether they can attend the site to troubleshoot.
- Customer engagement is considerably higher than anticipated. Customer needs change over time and education is needed to optimise operation of the SAPS.
- Retailers require education around SAPS systems not being connected to the network but maintaining the need for a retailer.
- Customers perceive having access to the poles and wires network on their property to be of higher value and more conducive to retaining land value compared with a non-network solution.
- Where SAPS makes sense on our network, and how the technology can be used to facilitate risk based and financially driven asset management decisions, as well as network resilience.
- SAPS have the potential to decrease network charges for our customer base by improving the financial viability of high cost-to-serve fringe of grid customers.

3.2 Fleet

In advance of the 2019-20 bushfires, Essential Energy had begun a fleet transformation project that established internal fleet capabilities, including regional hubs for maintenance. This new field capability enabled the fleet maintenance, inspection, and servicing to be mobilised to support the recovery efforts for the numerous fires across our network footprint during 2019-20. We set up fleet hubs close to the firegrounds, supported by the regional maintenance workshops.

The expanded fleet team was able to organise delivery of heavy and specialist vehicles (more than 160 specialist assets mobilised) from across the state to support the local fleet, along with additional fuel supplies (more than 130,000 litres dispatched), and partnering with suppliers of tyres, truck parts, fuel and lighting, at each of the hubs to enable our fleet support.

The specialist assets deployed including telehandlers, excavators and plant (crane borers and elevated work platforms (EWPs)) were brought in from other areas or hired from third parties. This was due to the volume of the work as well as the challenging environment, which conventional equipment was not able to access.

Bulk fuel was procured and dispensed at Essential Energy's fleet hubs. The purpose for this was three-fold: (1) increased efficiency by reducing lost time transiting to public retailers, (2) fuel security due to supply chain impacts, high public demand and restrictions by retailers, and (3) catering for high usage due to higher consumption and greater asset utilisation.

Tyres are a particular safety concern in bushfire environments. A higher condition standard is required, due to more strenuous use from greater off-road activity, high ambient and surface temperatures, and the risks associated with breakdown in a bushfire environment.

Similar to the need for greater tyre specifications, the increase in maintenance activities was driven by higher maintenance standards due to the risks associated with breakdown and the harsher environment in which the assets were operating. This was most evident with the induction system (air intake) whereby cabin and engine filters were replaced at a much higher frequency due to exposure to ash and smoke.

During the recovery effort, the fleet team worked 24 hours per day, with major maintenance scheduled for after hours to perform proactive maintenance, repairing defects, fuelling and lubricating all of the assets in preparation for the next shift; reducing the risk of any issues or breakdowns, and maximising asset uptime. We proactively replaced more than 150 damaged or defective tyres, and completed over 1,700 preventative and corrective maintenance activities – this was additional and did not impact any future servicing requirements for business as usual (BAU) work. The team also monitored road and transport conditions, informing operational teams of challenges, changes and safety issues, while also providing in-field mechanical, auto electrical and plant support.

3.3 Vegetation management

Initial Hazard Tree inspections were carried out immediately after the bushfires. The inspections involved the assessment and identification of Hazardous Trees across 27,436 spans, which posed both an immediate and short term risk to the Essential Energy network. The initial inspections resulted in the removal, trimming and debris removal of more than 23,000 trees, which prior to the fires were considered outside of scope under the ISSC3 standards (Industry Safety Steering Committee Guideline for Managing Vegetation near Powerlines 2005).

Given the severity of the fires, it was impossible to determine during the initial inspection if the trees would regenerate. As a result, a secondary inspection was planned and carried out six months after the initial inspection. The secondary inspection involved the reassessment of more than 17,000 spans and the assessment, identification, and removal of more than 4,000 additional hazardous trees. We have finalised the secondary inspection of the trees within the areas of network, which were impacted by the fires. Any future works, excluding the current open works or removal of vegetation wastage as a direct result of the bushfires, will be funded through our annual approved budgets. Please refer to Attachment H for more information about our vegetation management practices and the impact from the bushfires.

3.4 Communications

Essential Energy prioritised restoring supply to critical infrastructure sites, such as emergency services and telecommunication towers – the restoration of supply to these towers was equally important to Essential Energy as we rely upon them for our operations.

It is important that a variety of communication methods are available in emergencies – Ultra High Frequency (UHF), mobiles, radio communications and satellite phones allowed system operations and depots to remain in contact with field crews. Radio communications were most reliable in emergency conditions. Satellite phones were less reliable due to smoke interference.

Essential Energy supplies power to a number of telecommunication towers used by mobile phone providers such as Telstra and Optus, and critical services involved in the bushfire recovery; including the RFS, RMS and NSW Police.

Bushfires meant that power supplies were cut to some of these sites. As they are often located in remote areas with steep and difficult terrain, restoration times can be lengthy. To ensure that this restoration was prioritised, Essential Energy arranged for the provision of SAPS to support these critical pieces of infrastructure at Peak Alone, and Mt Selwyn, whilst more permanent solutions were investigated, as discussed earlier.

3.5 Customer support

Essential Energy is aware of the reliability that customers expect, but the unprecedented fire season meant that the standard fault and emergency response was not possible. We undertook a series of customer support initiatives during the emergencies, supports which are not standard for Essential Energy. We provided large generators to power evacuation centres, Council critical infrastructure such as water and sewerage supplies, and other critical services such as fuel stations and nursing homes. We also provided 705 fuel cards and 165 generators to residential customers who were affected by substantial network damage.

Funding in the current regulatory period, via the AER, did not provide for these activities, however the AER confirmed that we were able to supply temporary generation as part of our standard control services.

It took time to deploy generators to customers who did not already have them:

- A large area was not accessible due to unsafe fire grounds– some areas were not accessible for up to 21 days.
- It also took some time to assess the extent of the damage once access was granted. Once damage was assessed, restoration timelines could be determined.
- After discussions with emergency services, customers were then contacted and generators procured. This is not equipment that we have as standard.

In addition, as a gesture of goodwill Essential Energy replaced private electricity assets to habitable dwellings in the aftermath of the bushfires. Landowners were not charged for repair of private assets damaged or destroyed by bushfires. These costs are not included in this application.

Connection fees have also been waived whilst customers are rebuilding, and we are contributing $600 towards costs associated with reconnecting premises to our network for 2 years. These costs are not included in this application. We also backdated final meter readings to the previous reading date for premises destroyed by bushfire, and cancelled disconnections for non-payment during the NSW Emergency Declaration period.

Essential Energy's and Endeavour Energy's customer contact centres supported each other's customers who called, with:

- providing restoration times obtained from the other distributor's website, or relevant media releases; and
- assisting life-support customer calls via 'warm' transfer (providing relevant information as part of the transfer).

Strong positive feedback was received from the community about the dedication and commitment of our employees.

4. Mitigating the impact

4.1 Insurance

Essential Energy insures its structures such as substations and buildings, however, consistent with most other network businesses, we do not insure our poles and wires. Insurance for poles and wires assets is very expensive and difficult to source because it is high risk and there are few insurers willing to provide this product. The premiums required to eliminate risks to poles and wires would mean that network charges would be consistently higher for customers. We instead look to cover these events if they occur, and will only look to recover costs from network charges if we actually incur costs from a significant event – such as these bushfires.

In these bushfires, we had little damage to structures that were insured, but have claimed insurance where it was feasible to do so. None of the costs related to the insured structures are included in this cost recovery application.

4.2 Preparation

Whilst no electricity network can be 100 percent fire-proof, network safety and reliability are key priorities for the business. Our network has more than 1.4 million poles, more than 140,000 electricity distribution substations and nearly 200,000 kilometres of powerlines, with more than 80% of the network in designated bushfire zones. As part of our bushfire preparedness processes, we continually evaluate bushfire risk mitigation strategies. For example:

- Inspection of the network (we inspect more than 300,000 poles and over 40,000 kilometres of powerlines each year) and investing in network maintenance and renewal;
- Our network planning and design is increasingly becoming differentiated on the basis of bushfire risk - we undertake options analysis for different materials such as composite poles and insulated conductors, and assess for undergrounding vs overhead powerlines - we encourage consumers' mains connections in rural areas to be located in underground networks;
- Extensive pre-summer bushfire inspection and rectification programme for vegetation ensuring clearances around assets are maintained and regular engagement with the RFS;
- Research and learnings, including developing and maintaining strategic relationships with universities and organisations such as the Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) and CSIRO; and
- Investigation of new technologies – SAPS, Embedded Generation and Battery Storage Systems, which can reduce cross subsidisation, reduce risk and increase resilience.

Electricity and safety risk management regulations require Essential Energy to manage the network for risks related to bushfires. At the start of each bushfire season, Essential Energy has to assure the NSW Independent Pricing and Regulatory Tribunal (IPART) that we have complied with the requirements for vegetation clearances in high risk areas. We were compliant for 2019-20. After labour, our largest operating expense is on vegetation management in order to minimise the risk of bushfires in the communities we serve.

A significant number of our bushfire management plans were triggered during the 2019-20 bushfire season, with actions implemented from a number of plans:

- Emergency response and recovery plans;
- Business continuity plans; and
- Other plans relating to natural disasters, including local emergency plans.

4.3 Operations

Ongoing internal communications are issued to inform staff of bushfire season requirements, especially in relation to Total Fire Ban (TFB) periods and the switching restrictions that must be adhered to. During high fire risk periods such as TFB days, we take extra care when operating the network – adjusting protection settings, and amending our work practices to minimise the risk of causing a fire. We want to ensure that our work practices are not the cause of any fires, which are more likely to occur during those high risk days.

4.4 Network resilience

In addition to the above actions undertaken to prevent or mitigate the impact of bushfires, we are increasingly focussed on network resilience – how robust our network is for the future, so that it can continue to operate on a least cost over the long term. With changing climate and changing technology, Essential Energy needs to ensure the network is fit for the future and this will require a supporting regulatory and market framework.

While the bushfire crisis provides an opportunity to consider network resilience in a practical manner, there are some regulatory barriers to enhancing the resilience of electricity networks, and as always we need to ensure that any expenditure is justified.

Whilst it would be cost prohibitive to customers to rebuild the existing network in a way to survive all natural disasters (i.e. 1 in 50 or 100-year events), it is recognised that a risk based approach is required. Essential Energy is transitioning to a risk based approach which results in building greater levels of resilience into those parts of the

network which carry the greatest risk. Climate change provides challenges for network operators in predicting exposure to natural hazards. We are focussed on better understanding the variation in risk profile across our network to allow targeted investment in those parts of the network with high community consequence, for example from natural events such as bushfires. Composite poles and the use of undergrounding is more expensive than traditional poles and overhead lines, so we will look to use these solutions in targeted high risk areas, where they are the most efficient long term solution. We had a trial of composite poles underway in the Kosciuszko National Park during the 2019-20 bushfires, and these showed excellent fire-resistance with temperatures exceeding 600 degrees, compared to the timber poles beside them which burnt to ash.

Essential Energy wants to avoid rebuilding lines and other infrastructure, which will be in place for many decades, when another technology is available, which is capable of delivering a more reliable, resilient supply of electricity at a lower cost. As discussed earlier, SAPs were trialled in the 2019-20 bushfire restoration and are also an increasingly viable solution to permanently supply power to some customers in more remote areas – often at the end of long lines, surrounded by bushland, and at higher risk of outages generally.

There are also community expectations for Essential Energy to deploy appropriate power restoration solutions such as generators quickly, and at scale, during disaster response. In the aftermath of a disaster, improved access to smart meter data can also assist in quickly identifying which parts of the network are still working and which parts have been damaged, and allow for a faster more targeted restoration effort.

As the risks associated with climate change increase, the current approach we employ in relation to dealing with costs from natural disasters may need to be re-evaluated. We are looking to improve the resilience of the network to protect better, and respond more flexibly, to extreme weather events. Significantly more work, nonetheless, needs to be done in this area – including stakeholder consultation. Until this is completed, an 'after-the-event' approach to costs incurred, as per this application, will deliver the most value to all our customers. This is in terms of the price our customers pay for the cost of managing the risks associated with, and cost of responding to, extreme weather events.

5. Costs of the bushfires for Essential Energy

The costs of undertaking the bushfire response, plus the recovery work to date and in the future, are outlined in Table 1 below:

Table 1: Costs related to the 2019-20 bushfires

$M FY21	2019-20	2020-21	2021-22	2022-23	2023-24	2019-24
Opex - Vegetation	$10.3	$4.0	$4.0	-$0.1	-$0.1	$18.2
Opex – Contractors/other	$0.7	$0.3	$1.0	$0.0	$0.0	$2.0
Opex - Total	*$11.0*	*$4.4*	*$5.0*	*-$0.1*	*-$0.1*	***$20.2***
Capex - Asset rectification	$44.0	$2.1	$1.9	$0.1	$0.0	$48.2
Capex - Network rebuild	-	$0.3	$6.6	$0.0	$0.0	$6.9
Capex - Total	*$44.0*	*$2.4*	*$8.5*	*$0.1*	*$0.0*	***$55.0***
Total costs	**$55.0**	**$6.7**	**$13.5**	**$0.0**	**-$0.1**	**$75.2**

Totals may not add due to rounding

5.1 Labour

We have excluded employee costs for administrative and office based staff as they undertook BAU tasks, and there was little requirement for overtime payments. We have included field based employee costs because covering the bushfire restoration work resulted in delays in other scheduled work – which still needs to be completed - so overall we will have to spend more on field work than we planned for over 2019-24 (see section 3.1 above). The labour costs claimed do not include corporate overheads but do include an amount for fleet recovery. This is based on ordinary labour hours charged to the bushfires project and follows Essential Energy's normal methodology for allocating fleet costs to direct projects. It is considered to be a reasonable approach given that it is not possible to identify the exact vehicles used in the bushfire response, and as described in section 3.2, fleet support was required above BAU .

5.2 Surety around the costs

The costs of the bushfires have been captured under separate project codes for bushfires, ensuring direct expenses are identifiable. Deloitte Touche Tohmatsu provided pro bono assistance in the setting up and capturing of these costs. Significant restoration projects such as Cabramurra and Peak Alone, also have business cases supporting them, as discussed earlier.

Deloitte were also engaged to undertake a quality assurance review to ensure the incremental costs included in this application were accurate and only related to the 2019-20 bushfires.

5.3 Forecast costs

Due to the delay in the submission of this application, there is less uncertainty around forecast costs; nearly 80 percent is actual incremental costs already incurred. The remaining forecast costs are for identified network rebuild costs, vegetation work to be completed and network damage that is foreseen but as yet unidentified (awaiting the outcome of the aerial patrols) and expected to need rectification before July 2024 – all of these forecasts are for work due to the 2019-20 bushfires. Please refer to Attachment I, for further information on our cost methodology.

5.4 Efficiency of costs

As discussed earlier, despite the nature of most costs being related to emergency repairs, Essential Energy has worked to ensure that the expenditure incurred was efficient:

- We set up fleet hubs close to the fires and maintained our mobile assets overnight to maximise uptime.
- We are taking the time to rebuild the network better in difficult locations such as Peak Alone and Cabramurra – resulting in better value for customers over the long term.

In the immediate aftermath of each bushfire, we undertook emergency works to make hazardous situations safe and restore supply to our customers as quickly as possible where it was safe to do so. These emergency network safety and restoration activities are described in section 3.1 and comprised temporary repairs to ensure safety in the short term, as well as more permanent restoration work. Our emergency response to the 2019-20 bushfire season was governed by our internal policies relating to events that present a threat to our business as usual activities, and have the potential to impact the safety and reliability of our network and the environment.

Our preparation and mitigation of risk of bushfires has been discussed in section 4.2, as was our approach to insurance (section 4.1) which ensures value for money for our customers. In Attachments B and C we describe the activities that we undertook and the plans and procedures followed during the 2019-20 bushfire season. We also highlight the importance of collaboration with other emergency agencies, providing early access to information, and allowing for better planning and more efficient restoration for our customers.

5.5 Any offset of 2019-24 allowances?

The devastating impact of the bushfires has caused additional costs, and given that the firegrounds were in a relatively well maintained part of the network, we did not initially identify any avoided costs. However, following

feedback from stakeholders, we looked more closely at this issue - refer to Attachment L for details of the avoided costs included in this application.

We have identified 4 pole replacements and 460 scheduled tasks that were expected in FY22 which were cancelled because they related to an asset that was either replaced or repaired early as part of the bushfire response. We have therefore removed $215k from our calculations.

As part of the Cabramurra rebuild business case, there was a 15km reduction in powerlines going through national parks which meant that there will be less vegetation management needed. An estimated saving of $35k in vegetation management was incorporated into the business case, along with a further $8k in savings on maintenance and line inspections.

We have found that rather than there being reduced vegetation costs compared to business as usual, that vegetation costs are higher. In the aftermath of the bushfires, seeding events occur, so there is more work required to control and remove young trees, in addition to identifying damaged hazard trees. This is an ongoing process as a damaged tree may revive and need trimming/removal due to proximity to assets, or it may die and need removal for the same reason, refer Attachment H. Essential Energy also takes a careful approach to management of hazard trees. Where trees can be removed rather than just trimmed, we are undertaking that work with our contractors as part of our bushfire risk mitigation strategy. The seeding event also had a boost due to the record rainfall along the east coast of NSW in February 2020[7].The boosting impact of rainfall on vegetation growth, following drought conditions, was discussed in South Australia Power Network's cost pass through application for extra vegetation growth in 2013. The significant rainfall in February 2020, was discussed as part of Ausgrid's storm cost pass through in 2020. In spite of the additional growth, we have removed $194k from our costs claimed, to reflect a reduction in planned cyclical groundline vegetation work in bushfire affected spans.

5.6 Significance of the costs

Table 2 below shows that the impact of these costs is material (more than one percent), when compared to our allowed revenue allowances (what we can recoup in network charges) approved by the AER for 2019-24. This shows that the costs of the bushfires incurred in 2019-20 alone, were nearly six percent greater than the revenue allowed for that year.

Table 2: Bushfire costs compared to our allowed revenue (FY22 debt update)

$ million, Nominal	2019-20	2020-21	2021-22	2022-23	2023-24	2019-24
Approved annual revenue unsmoothed	$938.5	$1,003.5	$1,020.3	$1,058.1	$1,043.6	**$5,064.0**
Total bushfire costs	$55.0	$6.9	$14.1	$0.0	-$0.1	**$76.0**
Percentage shortfall - totex	**5.9%**	**0.7%**	**1.4%**	**0.0%**	**0.0%**	**1.5%**

6. Customer engagement

It was important that our customers had a chance to understand and challenge this application for costs before it being submitted to the AER. To this end we held two roundtables with consumer advocates and stakeholders:

The first roundtable in June 2021 outlined the cost pass through event and the impact on the business as well as the resulting costs (incurred and forecast cost to June 2024).

The second roundtable in July 2021 focussed on addressing the feedback from the first session and preferences to recover the additional costs - e.g. all recovery over two years or seven years, with possibly more recovery in the fixed portion of a bill. Further modelling was requested by stakeholders and subsequently undertaken by Essential Energy, to illustrate different options put forward by them; to reflect external impacts such as wholesale electricity

[7] BOM Special Climate Statement 74 June 2021, Figure 10 and Table 5 Link

prices or the NSW Electricity Infrastructure Roadmap. Following out of session feedback from consumer advocates specifying their preferences, we now propose cost recovery over two years, and that it only be recovered against the fixed portion of distribution charges.

We greatly valued the discussion with customers at these sessions – Attachment J outlines the progress of the engagement, through the presentations shared at the roundtables and the recaps. It outlines the issues raised that required further supporting information in our application and our responses which show how our application was informed by that feedback. Further information on cost recovery was shared with attendees following the second roundtable, and feedback was subsequently received on cost recovery preferences - this is also included.

7. Cost recovery

7.1 Eligible event

In Essential Energy's 2019-24 regulatory determination, the AER confirmed that if a natural disaster event were to occur over the next five year period, that Essential Energy could potentially recover costs associated with the disaster via customer prices[8].

Over the course of the bushfire season, the costs of dealing with the impacts kept growing. Essential Energy took comfort in various government announcements of bushfire recovery funds being available to relieve the burden. However, given the impact of the COVID-19 pandemic on governments and communities, we have been advised that funding is no longer available.

7.2 Timing

In April 2020, Essential Energy requested, and the AER approved an extension to submit any cost pass through application to 31 August 2020. A further extension was approved to 14 January 2022 to align with a cost pass through application for changes to licence conditions. Essential Energy undertook customer consultation for both of these applications in parallel, as the cost recovery impact for both events is relevant to customers.

7.3 Customer preferences

As discussed in section 6, consumer advocates who attended the roundtable in July 2021, were asked for their preference on cost recovery - they told us that they preferred to have us recover these additional costs in network charges over two years. Despite having a larger pricing impact than if recovery was done over a longer recovery period, it will be slightly cheaper in the long run, and more importantly is a more expedient option. There were concerns of uncertainty surrounding the 2024-29 price path, as well as potential external impacts affecting customers' bills from wholesale electricity prices, the NSW Electricity Infrastructure Roadmap, or increased costs/frequencies of natural disasters from climate change.

7.4 Amount we are looking to recover

We are asking the AER to approve increasing our allowed revenue by $33.8M to cover the shortfall in revenue that should have covered these extra costs – this revenue reflects what we would have received if these costs could have been forecast in our 2019-24 regulatory proposal.

Table 3 below shows the planned recovery of this shortfall – based on an even apportionment over the two years, adjusted for the time value of money. Refer to Attachment N for the calculations.

[8] AER, Essential Energy 2019-24 Determination Attachment 14 – Pass Through Events Link

Table 3: Proposed change in smoothed revenue (FY22 debt update)

$ million, Nominal	2019-20	2020-21	2021-22	2022-23	2023-24	2019-24
Approved annual revenue smoothed	$1,001.7	$1,006.8	$1,007.6	$1,014.6	$1,021.7	**$5,052.4**
PLUS 2019-20 bushfires pass through	-	-	-	$16.4	$17.4	**$33.8**
Updated annual revenue smoothed	**$1,001.7**	**$1,006.8**	**$1,007.6**	**$1,031.0**	**$1,039.1**	**$5,086.2**

The recovery pattern above results in a typical residential customer paying an estimated average of $12 extra in their retail bill for each of the next two years, and a small business customer paying an average $46 extra each year.

In addition to preferring a shorter recovery period because of more uncertainty about the longer term, consumer advocates showed a strong preference for the increase to be added to the fixed portion of the distribution charge only. This means that customers on the same tariff will have the same increase applied, irrespective of how much electricity they use. This preference will be discussed with the AER as part of our annual pricing proposal early next year.

8. Compliance Check

Table 4 below provides a checklist showing that this application complies with the National Electricity Rules (NER) pass through provisions, set out in clause 6.6.1 and cross-references the location of the relevant information in the application.

Table 4: Check against NER cost pass through requirements

NER clause	Description	Information provided	Section/s
6.6.1(a1)	Identification as a pass through event An event allowing for pass through of costs may be specified in the distribution determination (sub 5)	This application confirms that the 2019-2020 summer bushfires meets the 'natural disaster' event specified in Essential Energy's 2019-24 determination	1 7.1
6.6.1(a)	A DNSP may seek AER approval for the pass through for a positive change event To qualify as a positive change event the DNSP must have incurred materially higher costs (NER defined) in providing direct control services	The application confirms that Essential Energy incurred materially higher costs in providing direct control services, and accordingly the event qualifies as a positive pass through event	5.6
6.6.1(c)	A DNSP must submit a statement within 90 business days of the relevant positive change event occurring	The application submitted is equivalent to a written statement and provides evidence on the period of the bushfires and date agreed with the AER to extend the submission for the purposes of the pass through application.	7.2

NER clause	Description	Information provided	Section/s
		The final date to submit the application is now 14 January 2022 – refer 6.6.1(k)	
6.6.1(c)(1)	The statement must specify: • The details of the *positive change event*	Outline of the extent of the natural disaster event (the 2019-20 bushfires)	1 2 3
6.6.1(c)(2)	• The date on which the *positive change event* occurred	As referenced above in 6.6.1(c)	1 7.2
6.6.1(c)(3)	• The *eligible pass through amount* in respect of that *positive change event*	Details and justification for the additional costs Table of proposed cost increases over the reg period	5 7.4
6.6.1(c)(4)	• The *positive pass through amount* the *Distribution Network Service Provider* proposes in relation to the *positive change event*	The application proposes a positive pass through amount	5 7.4
6.6.1(c)(5)	• The amount of the *positive pass through amount* that the *Distribution Network Service Provider* proposes should be passed through to *Distribution Network Users* in the *regulatory year* in which, and each *regulatory year* after that in which, the positive change event occurred	Table of the proposed recovery over the balance of the regulatory period	7.4
6.6.1(c)(6) i	Evidence of the actual and likely increase in costs	The application provides information on the costs incurred and methodology for forecasting future costs related to the positive change event.	5 Attachment D Attachment E Attachment F Attachment G Attachment I Attachment O
6.6.1(c)(6) ii	Evidence that the costs occur solely as a consequence of the positive change event	We describe the data sources and processes so we could determine the costs were solely due to the positive change event	5 Attachment I Attachment O

NER clause	Description	Information provided	Section/s
		Independent confirmation of this methodology is provided	
6.6.1(c)(6) iii	Evidence that it relates to the circumstances where the cause of costs is a retailer insolvency event	Not applicable	N/A
6.6.1(c)(7)	Such other information as may be required under any relevant *regulatory information instrument.* Essential Energy's 2019- 24 distribution determination notes that in assessing a natural disaster pass through application, the AER will have regard to the insurance held and whether that it represents a level that an efficient and prudent NSP would hold[9].	The application discusses our approach to insurance coverage for bushfire damage to network assets.	4.1
6.6.1(c1)	Any expenditure that may be for a restricted asset	*Essential Energy does not have any restricted assets*	N/A

9. Attachments list

A. Confidentiality Claim
B. Essential Energy submission to NSW Bushfire Inquiry April 2020
C. Essential Energy submission to the Royal Commission into National Natural Disaster Arrangements May 2020
D. Peak Alone – fact sheet
E. Peak Alone - long form business case - confidential
F. Cabramurra - fact sheet
G. Cabramurra - long form business case - confidential
H. Vegetation Management
I. Cost Recovery Methodology
J. Customer Engagement - confidential
K. Detailed cost information
L. Avoided cost spreadsheet
M. Cost build up spreadsheet
N. Post Tax Revenue Model
O. Independent Verification and Assessment report - confidential

[9] AER Final Decision - Essential Energy Distribution Determination - 2019 to 2024 p.45