

Safety Management System Performance Measurement Report

October 2024



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Executive summary

The Annual Safety Management System Performance Measurement Report has been prepared in accordance with the Electricity networks reporting manual – Safety management system performance measurement (September 2022) issued by the Independent Pricing and Regulatory Tribunal (IPART) to fulfil this statutory obligation.

The report provides information regarding the performance of Endeavour Energy's Electricity Network Safety Management Systems (ENSMS) which has been prepared in accordance with the Electricity Supply (Safety and Network Management) Regulation 2014 (ESSNM). It comprises two sections:

- Section A – Annual Safety Performance Reporting for the period 1 July 2023 to 30 June 2024; and
- Section B – Bushfire Preparedness for the period 1 October 2023 to 30 September 2024.

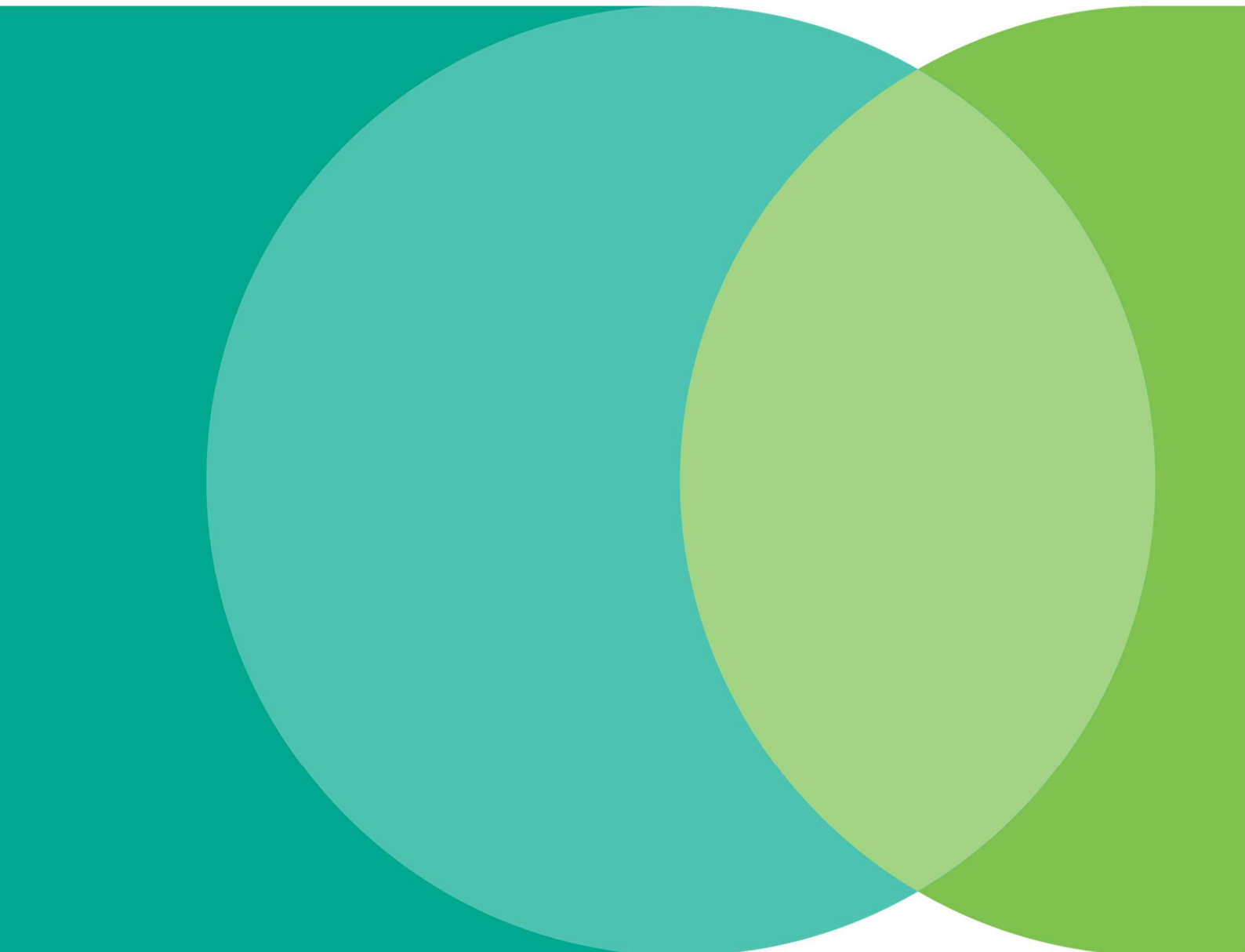
Data has been provided for the previous periods where it has been possible to do so, and this will continue to be populated in future reports.

Where reported figures are shown as “-” this denotes no report data is available. Where “0” is shown this indicates a reported figure. For other scenarios an explanatory note or footnote has been added.

The data sourced for this report has been outlined in the Basis of Preparation (refer to Attachment 2). Endeavour Energy also maintains a Technical Basis of Preparation document containing code and technical details on the sourcing of this information.

Annual Safety Performance

Section A



A.1 Tier 1 – Major incidents

Tier 1 incidents are defined as a 'Major Incident' in accordance with the Electricity networks reporting manual – Incident reporting.

Table A.1 Major incidents

ESSNM Objective		Description of each major incident reported under the Reporting Manual – Incident Reporting requirements
Safety of members of the public		SEWA 1 - 19 February 2024 Ellen Street/Kenny Street, Wollongong - Public Worker Level 33 Projects - worker onsite had been taken to hospital with minor electrical burns after attempting to cut an 11kV cable with an angle grinder.
Safety of persons working on the network		Nil
Protection of property	Third party property	Nil
	Network property	Nil
Safety risks arising from loss of electricity supply		Nil

A.2 Tier 2 – Incidents

Tier 2 incidents are defined as an ‘Incident’ in accordance with the Reporting Manual - Incident Reporting.

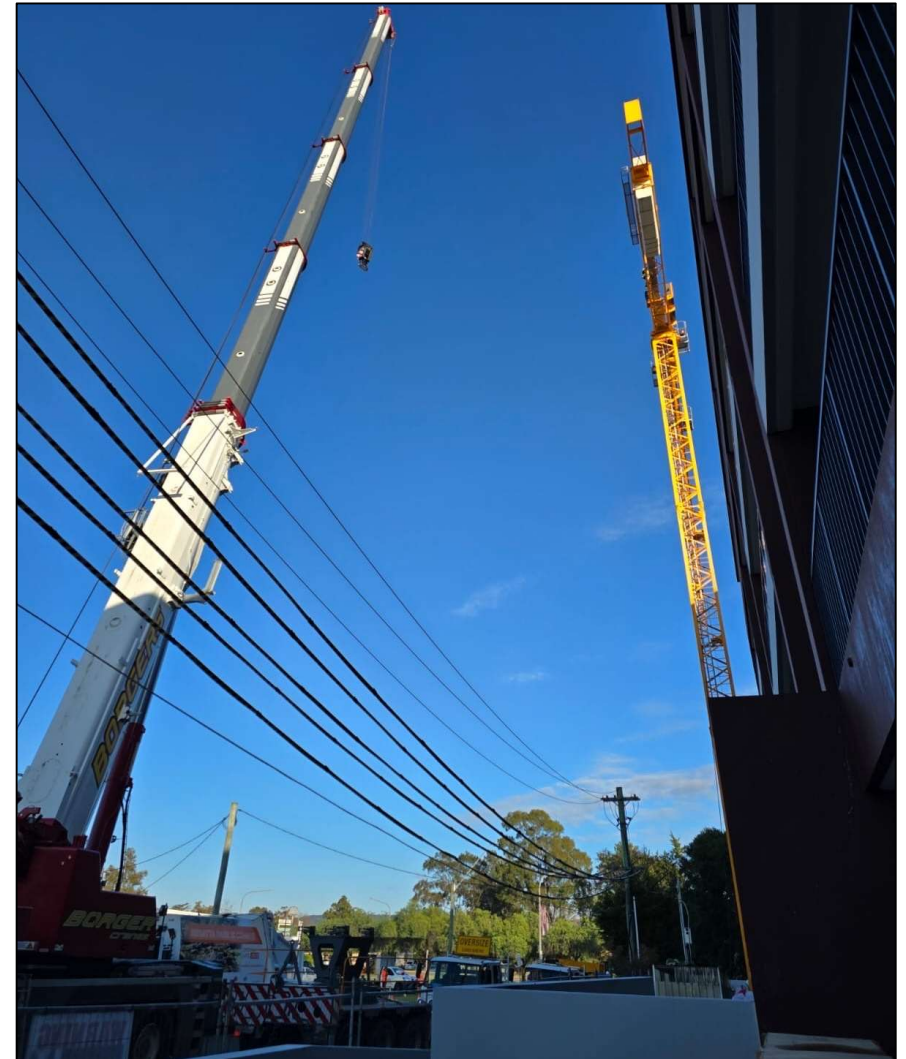
Table A.2 Incidents

ESSNM Objective	Description of each major incident reported under the Reporting Manual – Incident Reporting requirements
Safety of members of the public	Nil
Safety of persons working on the network	<ul style="list-style-type: none"> - An Accredited Service Provider was in the process of securing a joint on an underground 11kV cable. During this task, they used a gas torch to heat the shroud, which unintentionally caused the nearby gas mains to ignite. As a result, the worker suffered burns to his hands and face. - Worker stumbled forwards whilst walking from personal vehicle to site after parking inside substation gates, fell and injured himself.
Protection of property	<ul style="list-style-type: none"> - Just after 2pm on 3 October 2023, Endeavour Energy became aware of a fire incident near its powerline at Brooks Point Road. In the high wind gusts present at the time of the incident, the ceramic body of an insulator separated from the bolt, leading to the 11KV mains being unsupported at the pole. The high wind then drove the unsupported conductor into the adjacent phase causing a clashing event to occur. At this instance the feeder protection tripped on overcurrent de-energising the network. The clashing event led to molten metal from the mains falling to the dry grass below, sparking a 16ha grass fire. - Crews responded to reports of no supply and a possible fire at Cumberland Reach about 4pm on 16 December 2023. On arrival, they noted strong winds in the area, a failed cross arm on its overhead network and a bush fire estimated to have a size of 35 hectares. - On 30 October 2023, there was a 9.1Ha fire which occurred near an Endeavour Energy asset, damaging power poles, crops and a small shed. Endeavour Energy only became aware of the size of the claim in October 2024.
Safety risks arising from loss of electricity supply	Nil



Case study – proactive measures to reduce risk

The number of Tier 2 incidents has reduced in FY24 compared to previous years. In part this reduction can be attributed to a large amount of proactive engagement with third parties on or near our network. This includes engagement with ASPs, large construction companies working around our network, engagement with councils and local authorities.



A.3 Tier 3 – Control failure near miss

Table A.3 Network asset failures

Performance measure	Population	5-year average annual functional failures	Annual functional failures (for reporting period)						
			Unassisted			Assisted			
			Fire			Fire			
			No fire	Contained	Escaped	No fire	Contained	Escaped	
Towers	832	0	0	0	0	0	0	0	0
Poles (including streetlighting columns/poles & stay poles and customer owned poles)	568,026	120.0	8	0	0	89	0	0	0
Pole-top structures	313,067	194.2	87	26	4	80	1	1	1
Conductor – Transmission (33-132kV) OH (km)	3,017	11.2	0	1	0	1	0	1	1
Conductor – Transmission (33-132kV) UG (km)	429	1.6	0	0	0	0	0	0	0
Conductor – HV (1-22kV) OH (km)	11,206	430.4	49	6	4	257	9	22	22
Conductor – HV (1-22kV) UG (km)	6,019	63.2	22	2	1	10	1	0	0
Conductor – LV (<1kV) OH (km)	8,609	316.4	84	8	3	184	2	9	9
Conductor – LV (<1kV) UG (km)	11,175	129.2	73	22 ^a	1	23	0	0	0
Service line OH	449,890	813.6	274	3	0	307	0	0	0
Service line UG	422,950	101	137	0	0	14	0	0	0
Power transformers	460	1.8	1	0	0	0	0	0	0

^a Fire data for underground conductors is primarily due to a failure in the termination, e.g. an impact to a pillar/column that subsequently causes an ignition

Distribution transformers	34,304	121.8	32	1	0	38	0	0
Reactive plant	190	0.2	0	0	0	0	0	0
Switchgear – zone/subtransmission/transmission substation	4,530	10.0	5	0	0	0	0	0
Switchgear – distribution (OH)	44,737	1,390.6	56	16	2	45	0	0
Switchgear – distribution (ground-based)	35,226	113.2	22	8	0	8	0	0
Protection relays or systems	20,472	16.0	4	0	0	24	0	0
Zone/subtransmission/transmission substation SCADA system	284	4.2	2	0	0	0	0	0
Zone/subtransmission/transmission substation Protection Batteries	303	0.2	0	0	0	0	0	0
Network SAPS	-	-	-	-	-	-	-	-

Case study – Asset Risk Analytics and Reliability

Endeavour Energy uses data and analytics to analyse the risk involved with asset failures, considering the likelihood and consequence of failures. The purpose of this analytics is to inform/prioritise programs that either prevent or minimise the impact of functional failures. System upgrades have enabled granular data capture from asset systems. Analysis of this data enables interventions to high-risk assets and areas. The increased granularity of capture can lead to over reporting of functional failures as more non-functional failure types are captured. Endeavour Energy's reliability performance as measured by SAIDI has been reducing year on year for the past 3 years. The five-year functional failure average for distribution overhead switchgear is influenced by previous years. In previous years this asset class included protection operations where the switchgear functioned as designed to clear a fault that happened downstream.

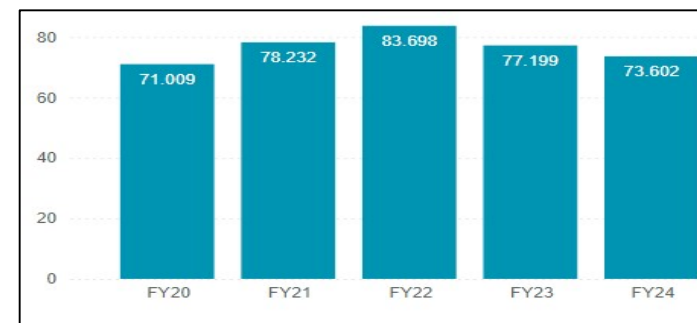


Table A.4 Vegetation contact with conductors

Performance measurement	Event count – Current reporting period	Event count – Last reporting period	Event count – Two periods ago	Event count – Three periods ago	Event count – Four periods ago	Comments
Fire starts – grow-in	3	1	0	0	1	
Fire start – fall-in and blow-in	35	17	14	15	47	Fire starts attributed to vegetation falling or blowing into network equipment have increased this year as weather returns to more average conditions.
Interruption – grow-in	0	0	0	0	0	Interruption event cause data does not separate 'grow-in' events from 'fall-in and blow-in'. Events have been recorded against 'fall-in and blow-in' as this is the dominant cause of vegetation interruptions.
Interruption – fall-in and blow-in	910	857	1,451	3,583	4,985	The reduction in interruptions from FY21 to FY22 is primarily driven by system changes that changed the classifications of events to better categorise the cause

The frequency of significant windstorms is contributing to ongoing events in this space. Endeavour Energy has recently implemented a new vegetation management system which enables improved analytics and ability to manage vegetation incidents. Enhanced visibility of incidents informs the investment programs aimed at improving performance.

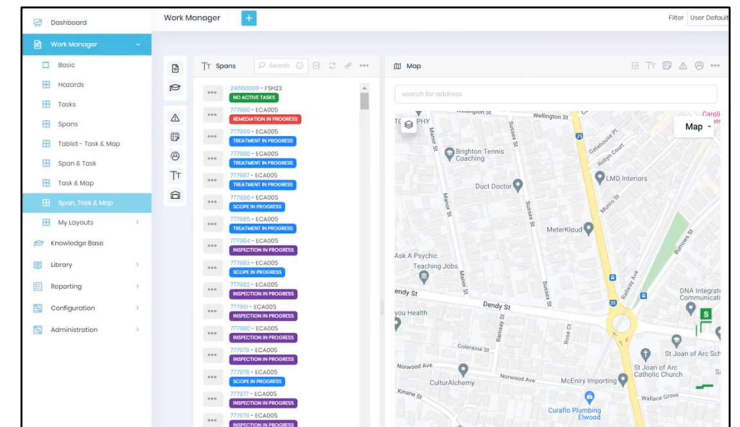


Table A.5 Unintended contact, unauthorised access and electric shocks

Detail	Event count – Current reporting period	Event count – Last reporting period	Event count – Two periods ago	Event count – Three periods ago	Event count – Four periods ago	Comments
Electric shock and arc flash incidents originating from network assets including those received in customer premises						
Public	89	62	85	107	100	Over time significant improvements in proactive identification of faulty neutral connections through a range of asset management programs, comprehensive routine testing processes and leverage of technology through smart meter data analytics.
Public worker	4	6	9	1	1	Reported one fencing contractor struck an UG LV cable and received a shock. Two reports of plumbers repairing water meter and receiving a shock. Worker cut 11kV cable with angle grinder (no shock – only arc flash).
Network employee/network contractor	4	1	2	4	1	Worker exposed to an arc flash when HV Switchgear failed during operation. Worker cut through a live LV cable. Worker exposed to an arc flash while testing LV link box. An arc flash occurred in a pillar while lifting off the pillar lid.
Accredited Service Provider	0	0	1	2	1	
Livestock or domestic pet	0	1	1	0	0	
Contact with energised overhead network asset (eg. conductor strike)						
Public road vehicle	300	194	268	248	224	Includes Agricultural, Network Vehicles & Other this reporting period. Proactive analytics work has commenced to identify hot spots for

						impacts that will enable proactive rectification targeted at addressing this risk.
Plant and equipment	18	23	206	112	26	Improvements in industry engagements and stakeholder partnerships driving focus on OH powerline planning is a key driver in this space. Additionally, the use of Look Up and Live tool is enabling proactive planning practices for public workers.
Agricultural and other	N/A	N/A	N/A	57	14	Due to ongoing implementation of SAP and ADMS Upgrades, we cannot differentiate Agricultural and Network Vehicles during this reporting period. These have been included in the Public Road Vehicle (total).
Network vehicle	N/A	N/A	N/A	0	1	Agricultural and Network Vehicles this reporting period have been included in the total (Public Road Vehicle).

Contact with energised underground network asset (eg. conductor strike)

Plant and equipment	52	40	57	71	52	Strategic partnership with BYDA is enabling improvement in this area despite the rise in incidents due to infrastructure development and urban growth across Western Sydney.
Person with handheld tool	1	0	0	0	1	

Unauthorised network access (intentional)

Zone/BSP/Transmission substation/switching station	1	3	3	2	3	Upgrade to ADMS (Advanced Distribution Management System) has enabled enhanced capture, hence the spike in Reported instances for Distribution Substations and Towers / poles.
Distribution substation	9	19	30	8	2	Abnormal spike in vandalism activity in FY22 during COVID lockdowns. Vandalism incidents were in localised geographic area.
Towers/poles	8	51	82	0	1	There is an increasing trend of customer theft on the low voltage network captured in other
Other (e.g. communication sites)	20	0	0	0	0	

Safe Approach Distance (SAD)						
Network employee/network contractor	2	1	0	0	1	Worker breached SAD when removing temporary insulation on the LV Network. Vegetation contractors cut trees within SAD without network support.
Accredited Service Provider	0	0	0	0	0	
Public	0	0	0	0	0	Unlikely a member of the public would self-report a breach and thus no known reports.
Public worker	16	12	0	2	3	Increased awareness of SAD requirements and focus on improving quality and volume of near miss reporting related to public workers (e.g. each occasion is reported to SafeWork NSW for further triage/investigation).

Table A.6 Reliability and Quality of Supply

Performance measurement	Event count – Current reporting period	Event count – Last reporting period	Event count – Two periods ago	Event count – Three periods ago	Event count – Four periods ago	Comments
High voltage into Low voltage	119	81	51	55	62	
Sustained voltage excursions outside emergency range	683,101	305,907	80,758	1936	1	The continued increase in this category is the result of enhanced smart meter access now reaching over 600k customers, which has led to an increase in visibility of incidents. These events were detected over 5436 meters. Whilst the number of excursions is high this has not resulted in a similar spike in complaints. In FY24 there were 492 complaints from customers without DER systems due to overvoltage.
Reverse polarity	0	0	0	1	1	The testing and certification process for staff is effectively managing this risk.
Neutral integrity due to poor workmanship or incorrect procedure	2	0	0	0	0	Neutral integrity issues are ordinarily identified when a voltage is present within a customer's premises causing a shock. Consequently, these are already captured in Table A5, specifically "Electric shock and arc flash incidents originating from network assets including those received in customer premises".
Neutral integrity due to asset defect or failure	136	0	0	0	0	Reporting criteria and process has enabled better scrutiny of data. Significant advancements in smart meter data analysis have enabled the proactive identification and subsequent rectification of neutral connection issues that have degraded due to asset failure such as corrosion, ageing, wear and tear, etc.

Table A.7 Reliability and Quality of Supply – Critical infrastructure incidents

Type of critical infrastructure (e.g. hospital, tunnel)	Minutes of supply lost	Cause	Consequential safety impacts associated with supply issue
Hospital - Category A1	64	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category A1	3	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category A1	3	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category A1	6	Unknown	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category B	76	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category B	56	Tree contact	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category B	10	Tree contact	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category B	7	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category B	13	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category B	5	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category B	11	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category B	57	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.

Hospital - Category B	308	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category B	130	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	23	Tree contact	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	1124	Tree contact	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	213	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	104	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	264	Tree contact	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	148	Foreign Interference	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	46	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	121	Tree contact	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	7	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	9	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	130	Unknown	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	121	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.

Hospital - Category C	126	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	173	Tree contact	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	74	Foreign Interference	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	5	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	5	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	5	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	11	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	24	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	57	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	57	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	57	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	28	Unknown	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	1,370	Unknown	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C	1,409	Unknown	No safety impacts resulted from the outage as alternate methods of supply was available.

Hospital - Category C2	139	Adverse weather	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category C2	13	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category D	12	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category D	121	Adverse weather	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category D1a	141	Tree contact	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category D1a	89	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category D1b	23	Adverse weather	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category D1b	39	Foreign Interference	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category D1b	18	Defective equipment	No safety impacts resulted from the outage as alternate methods of supply was available.
Hospital - Category D1b	98	Adverse weather	No safety impacts resulted from the outage as alternate methods of supply was available.

Table A.8 Network-initiated Property damage events

Detail	Event count – Current reporting period	Event count – Last reporting period	Event count – Two periods ago	Event count – Three periods ago	Event count – Four periods ago	Comments
Third party property (assets including vehicles, buildings, crops, livestock)						
Damage (e.g. Fire, Physical impact or Electrical)	3	0	1	0	1	For further details, refer to Tables A.1 and A.2
Network property (including non-electrical assets including vehicles, buildings)						
Damage (e.g. Fire, Physical impact or Electrical)	0	0	0	0	1	

A.4 Tier 4 Control Implementation

Table A.9 Amendments and improvements to Formal Safety Assessments (FSA) or Associated Risk Treatments

FSA	Amendments/Improvements
Worker injury – non-electrical	<p>A gap analysis between the causal factors from HPI events (FY24 and FY23) and the FSA risk assessments was completed. A minor change has been implemented to the FSA risk assessment stating delivery partner contracts for traffic management, their vehicles must have handbrake alarms. A future scope will be to make it mandatory for all delivery contract vehicles to have handbrake alarms.</p> <p>10 TAPs completed in FY24 and one action overdue with a revised due date in FY25.</p>
Bushfire	<p>Bushfire FSA was updated in September 2023, with a re-write of the document and Bushfire Risk Register. This included a quantification update of the ALARP determination of the risk controls. Three TAPs were identified, two of which are partially complete due to being negatively impacted by Protected Industrial Action (PIA) and the third TAP is complete.</p>
Worker Injury Electrical	<p>The FSA is currently under review and will be completed in FY25. At present, three Treatment Action Plans (TAPs) are in progress and will be finalised in FY25.</p>
Environmental Management System	<p>Endeavour Energy is certified to AS/NZS ISO 14001:2015, the November 2023 audit identified zero non-conformances.</p> <p>Endeavour Energy participated in the 2024 Global Real Estate Sustainability Benchmark (GRESB) Assessment and scored a 5-star rating and our best ever score of 98/100.</p>
Public Safety	<p>FSA has not been amended however; 5 Treatment Action Plans (TAPs) are in place, with 4 completed and 1 in progress.</p> <p>The FSA will be reviewed after the completion of FY24 data collection and finalised in FY25.</p>
Loss of Supply	<p>Loss of Supply FSA was updated in FY23, and being updated in FY24, with estimated completion date October 2024, post stakeholder engagement sessions.</p> <p>TAP status: 2 complete, 3 on track and 2 are at risk (due to PIA).</p>

Table A.10 Design, construction and commissioning

Performance measure	Current reporting period	Last reporting period	Two reporting periods ago	Three reporting periods ago	Four reporting periods ago
Designs for which Safety in Design (SiD) Reports have been completed	1,012	541	843	1,121	886
Designs for which Safety in Design (SiD) Reports have been audited	26	10	0	5	0
Contestable designs certified	1,166	1,319	1,394	1,490	1,487
Contestable level 1 project safety reviews performed	1,074	1,042	865	1,410	1,559
Contestable level 2 project safety reviews performed	136	197	210	303	409
Non-contestable project safety reviews performed	5,289	3,996	2,469	2,769	2,351
Project closeout reports completed for contestable projects	761	838	1,204	1,045	1,119
Project closeout reports completed for non-contestable projects	301	268	217	23	98

Table A.11 Inspections (assets)

Performance measure ^a	Planned inspection tasks	Inspection and maintenance tasks			Tasks identified (all categories)	Corrective action tasks ^b			Comments
		Achieved	Open ^c	Outstanding		Achieved	Open	Outstanding	
Transmission/Zone Substations ^d	43,009	29,175	0	13,834	96	47	0	49	
Distribution Substations	11,653	2,883	0	8,770	780	311	0	469	
Transmission OH	9,126	7,656	0	1,470	165	65	0	100	
Transmission UG	3,623	3,127	0	496	130	68	0	62	
Distribution OH	1,433	491	0	942	3,478	1,603	0	1,875	
Distribution UG	26,145	22,212	0	3,933	188	122	0	204	
Network SAPS	-	-	-	-	-	-	-	-	-

Inspections

Inspection and maintenance tasks completion rate is at 70% overall. Endeavour Energy reviews the maintenance frequencies of the assets with the aim of maximising the customer outcomes over the life of the asset. As foreshadowed in the 2023 report, Endeavour Energy has continued its efforts to improve reporting methods throughout the 2024 reporting period. An outcome of these efforts has been improved accuracy of our planned inspection reporting; consequently, a comparison of “planned inspection tasks” for some asset classes with prior years may not be meaningful.

Corrective actions

Endeavour Energy classifies defects based on the severity of the defect. Over 90% of the highest priority defects are rectified within 2 days of being identified. Substation defects (which have the biggest impact on larger groups of customers) are mostly addressed on or before their due dates and make up a smaller portion of corrective actions.

In order to enable analytics on asset failures and establish leading trends for asset failure Endeavour Energy also captures corrective actions for non-immediate issues. In this reporting period Endeavour Energy have 89,781 of which 11,357 were closed in FY24 when there was other works undertaken on or near the impacted assets. A cost-risk justification framework is in place to ensure that defects are rectified in line with customer expectations. Corrective actions are identified from planned inspection tasks and when there is work in the area, for example as a result of fault and emergency work or as a part of network scans.

^a Table A.11 does not include activities reported in Table A.12, Table B.3 (Vegetation tasks) and Table B.4 (Asset tasks).

^b Corrective actions included in this table exclude “observation” actions that are low risk and are intended for rectification when bundled with other work on the asset

^c Table includes inspections planned for FY24. These have either been achieved in FY24 or if they are open they are outstanding

^d Transmission and zone substation rows are combined as maintenance activities are scheduled for major substations and it is inaccurate to differentiate between the two

Table A.12 Pole Inspections Aerial/Ground-based

Bushfire risk category	Population (spans/poles)	Target	Achieved	Outstanding	Comments
Aerial					
Total	180,666	N/A	N/A	N/A	Covered in table B.2
Ground-based					
Total	432,407	78,500	78,644	0	

Note this year the population of aerial reported only covers those in bushfire prone areas that are subject to the inspection as a part of the PSBI program, not the entire population of spans/poles. Groundline population is all poles.

Table A.13 Public electrical safety plans and activities

Network operator public safety programs/ campaigns	Details
Public Safety Plan	The FY24 Public Safety Plan was developed with new initiatives and expanded to offer more comprehensive coverage across a broader range of business activities related to public safety, both directly and indirectly. The plan was regularly presented at Executive-level HSE committees throughout the year.
Public Safety Communications Plan	A communications plan was developed to inform internal and external communication and engagement activities including traditional media, social media and community outreach activities with various industry sectors, threat scenarios and key messaging.

Case study: Public Safety

Endeavour Energy takes a proactive approach to public safety including initiatives such as getting 95% of schools in our franchise area participating in Electrical Safety Week in the Electric Kids program. Endeavour Energy is also using technology to understand trending of public safety incidents and make sure that proactive programs are targeting the growing or highest level of risk. An example of this is the identification of a large portion of vehicle mains impacts. The impacts from previous years have been combined with network defects to identify “hot spots” that are of increased risk. The network defects and low mains programs can be prioritised for these hot spot areas and prevent further impacts from happening.

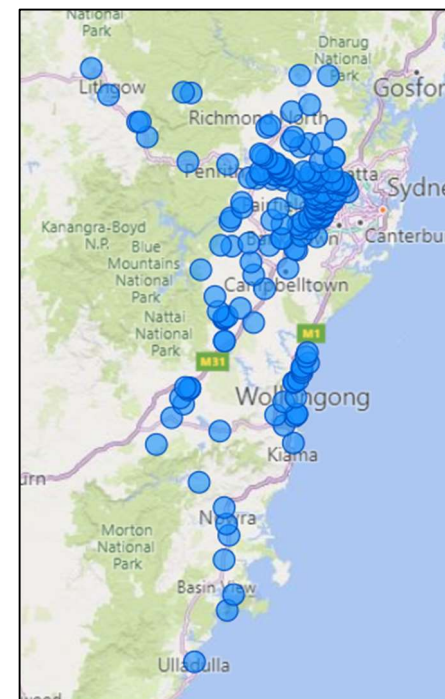


Table A.14 Internal audits performed on any aspect of the ENSMS (as per AS 5577^a clause 4.5.4)

Audit scope	Identified non-compliances	Actions take or proposed by network operator
Live Work and De-Energised Work Process	<p>Audit and Inspection of Live Work (Medium) – Audits of live work activities on the Endeavour Energy network are performed and report sent. However, there is no process to follow up on the report actions and inadequate quality assurance processed on the report.</p> <p>Decision to Perform Live Work (Medium) – It was noted that the Matrix only considers the complexity of the tasks, the impact of any interruption of electricity supply (de-energised conditions) on customers, and to a certain extent, reputational risks (by considering the impact of any unwelcomed supply interruption or injuries to employees or the public). Factors such as the cost of live work (compared with de-energisation), are not considered. Further, the original development of the Matrix did not include detailed analysis and/or calculations on the safety risk associated with working live under certain conditions compared with the benefit of doing so.</p>	<p>Develop an audit and communication protocol post-audit, engaging the Live Line Work auditor, the Electrical Safety Manager and the Operations Manager to review the audit findings. Include the verification of the effectiveness of audit actions in the protocol.</p> <p>Develop a working group involving Electrical Safety, Governance and Risk, Field Operations and System Operations and review the criteria for approval of LV live work. Present the findings and gain endorsement from the ENSMS Committee and ISSC for any changes. Review the list of authorised staff and agree on the group of staff who should be authorised. Update authorisations for any staff who no longer require this authorisation. Formally notify any staff who no longer require authorisation for this task.</p>
Technical training	No material non-compliances identified (all are low risk)	N/A
Hazardous Materials and Chemicals Management	<p>Inconsistent Implementation of the Processes to Control the Decanting of Hazardous Chemicals (Medium) – The plan outlines guidelines for handling hazardous chemicals, particularly during the decanting process. However, the site walkthroughs revealed deficiencies in implementing these controls, such as inadequate labelling of containers.</p>	<ul style="list-style-type: none"> - Release a Bulletin and undertake further reviews. - Update HSE Site Inspection and Fatal Risk Hazardous Materials and Chemical verifications to include: safe labelling of substances; the colours of portable fuel containers; capacity isn't exceeded; and cabinets are clear of combustible materials. - Further reviews were undertaken as part of the HSE Site Inspections. HSE Site Inspection criteria were updated. The inspection criteria that relate to ineffective decanting onsite are: <ul style="list-style-type: none"> o "Portable fuel containers are safely labelled and have correct colour tags"; and, o "Chemicals were not stored in unmarked/unlabelled containers". - Across FSC inspected in FY24 (19 inspections), all were compliant with the correct labels onsite. The incorrect fuel-coloured container or tag was identified as non-compliant (NC) at two FSC. These sites have since been fixed. Based on this analysis, further training was not required.

^a AS 5577 is the Australian Standard Electricity network safety management systems, 2013, published by Standards Australia.

Table A.15 External audits performed on any aspect of the ENSMS (as per AS 5577 clause 4.5.4)

Audit scope	Identified non-compliances	Actions take or proposed by network operator
Bushfire Risk Management and other Matters	<p>Endeavour Energy's implementation of the ENSMS was found to be non-compliant with AS-5577 4.4 regarding the identification and rectification of hardware defects.</p>	<p>Implement an additional cross-check assurance step in the defect entry process to address the control effectiveness weakening factor identified through the course of the audit.</p>
	<p>Vegetation management fails to rectify all A1 / A2 encroachments and fall in hazards before the start of the next Bushfire Danger Period (BFDP).</p>	<p>Review the cyclic vegetation trimming program schedule to identify alternatives that reduce defect rates and lower the risk of vegetation grow-ins.</p> <p>Review the vegetation growth allowance applied to forecasting potential vegetation defects and update if required.</p> <p>Vegetation crews attend a refresher briefing focussed on reinforcing Endeavour Energy's trimming standards, including hazard tree identification and reporting.</p>

Bushfire preparedness

Section B

B.1 Bushfire risk profile across network operator's supply area

Year in review

The 2023-24 financial year started warmer with lower rainfall than average driven by an El Niño event being active from September 2023 until late January 2024. This continuation of dry conditions from the preceding autumn and winter resulted in an increase in bushfire events across the Endeavour Energy network area during spring. The NSW Rural Fire Service declared 12 TOBAN event days impacting the network area between 19 September and 16 December 2023.

Despite the dry start to the year, a number of heavy rainfall events occurred from late November. As a result, rainfall deciles recorded by the Bureau of Meteorology were generally above average across the Endeavour Energy network area, however bushfire activity for the year was above average.

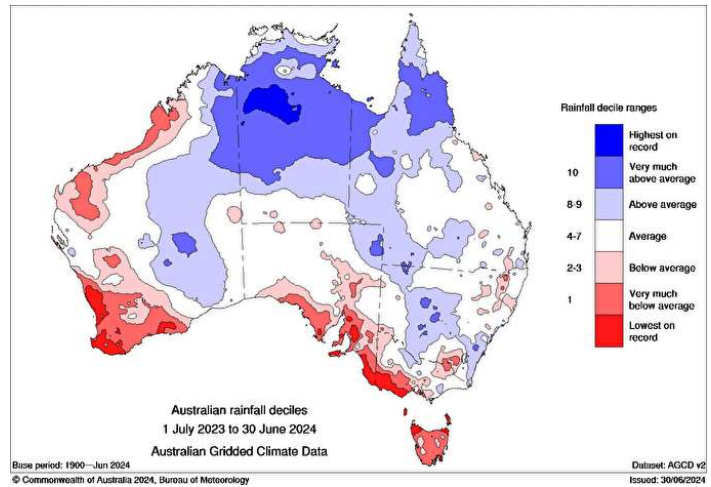


Figure 1 - Rainfall deciles for FY24

Forecast

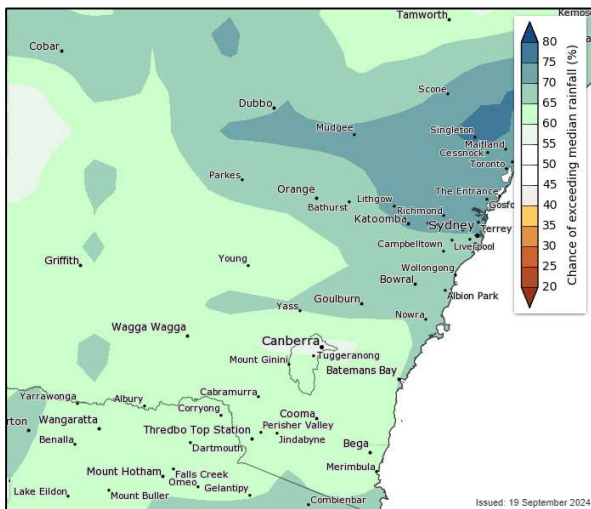


Figure 2 – Change of above median rainfall – November 2024 to January 2025

The Bureau of Meteorology has forecast above average temperatures and a slightly higher chance of above average rainfall across the Endeavour Energy network area for spring and summer 2024, resulting in normal bushfire conditions for the Bushfire Danger Period.

The seasonal outlook for Spring 2024 issued by AFAC (the Australian and New Zealand Fire Authorities Council) indicates that due to the climate forecast described above the bushfire outlook for the period ahead is normal for the Endeavour Energy network area.

Of particular note, normal fire potential is expected for areas burnt in the 2019-20 season due to recovering and curing fuel loads. This results in normal bushfire potential for 10,800 km² or 44% of the 24,800km² Endeavour Energy network area.

B.2 Permanent / temporary declaration of areas by NSW Rural Fire Service and network operator's actions

The NSW RFS has temporarily brought forward the commencement of the Bushfire Danger Period in a number of Local Government Areas in previous bushfire seasons, however no changes have been made within the Endeavour Energy network area this year. The table below details the LGAs within the Endeavour Energy operating area and their respective Bushfire Danger Period commencement dates.

Region	LGA	Temporary	Permanent
Greater Sydney	Blacktown City	Nil	1 October
	Blue Mountains City	Nil	1 October
	Camden	Nil	1 October
	Campbelltown City	Nil	1 October
	Fairfield City	Nil	1 October
	Hawkesbury City	Nil	1 October
	Liverpool City	Nil	1 October
	Parramatta	Nil	1 October
	Penrith City	Nil	1 October
	The Hills Shire	Nil	1 October
Illawarra / Shoalhaven	Kiama	Nil	1 October
	Shellharbour City	Nil	1 October
	Shoalhaven City	Nil	1 September
	Wingecarribee Shire	Nil	1 October
	Wollondilly Shire	Nil	1 October
	Wollongong City	Nil	1 October
Central Ranges	Lithgow	Nil	1 October
	Mid-Western Regional	Nil	1 October

Endeavour Energy carries out a number of bushfire risk mitigation activities including both year-round and seasonal activities leading up to and within the bushfire season. During the reporting period Endeavour Energy undertook:

- the Pre-bushfire danger period inspection and defect rectification;
- routine maintenance;
- vegetation clearing;
- network hardening activities (covered conductor and FireMesh);
- installation of early fault detection devices;
- emergency preparedness and response education sessions;
- liaison with emergency services and councils; and
- updated enhanced protection settings for the season.

Refer to tables B.1, B.2, B.3 and B.4 for details on the status of the Pre-Summer Bushfire Inspection Program.

B.3 Aerial consumers mains on bush fire prone land (HV and LV)

Aerial consumers mains are the overhead conductors and support structures between the main switchboard of an electrical installation and a support structure that is the connection point with the distribution system.

Low and high voltage overhead lines

Endeavour Energy's routine overhead line inspection program incorporates the inspection of aerial low voltage consumer mains including poles, conductors, and fittings. High voltage lines are inspected up to and including the high voltage metering point or the first point of protection (for example, dropout fuses, circuit breaker or switch fuse), whichever is first. If there is no high voltage metering point, all poles are inspected for the entire line length.

Where a defect is identified the customer is advised of the defect in writing and a copy of the written defect is to be forwarded to the OLI/GLI Manager. It is the customer's responsibility to have the defect repaired. Any defect that could result in a loose neutral connection, burning, or live metallic structures are regarded as an emergency hazardous situation and reported to the Endeavour Energy's Overhead Line/Ground Line Inspection (OLI/GLI) group for further action.

In addition to the routine overhead line inspection program, prior to the commencement of the Bushfire Danger Period, Endeavour Energy conducts a pre-summer bushfire inspection (PSBI) program which includes the identification and rectification of electricity asset defects and vegetation encroachments which have the potential to initiate a bushfire.

The pre-summer bushfire inspection program also includes inspection of overhead aerial consumer's mains located in bush fire prone areas. In a similar manner to the routine overhead line inspection program, the customer is advised in writing of any defects identified on overhead aerial consumers mains and are given a period of time that the defect must be rectified. Should the defect not be rectified within the specified timeframe Endeavour Energy will, under the powers provided by the Electricity Supply Act, either undertake the required works to rectify the defect and recover the reasonable costs for the work or disconnect the installation from the electricity network.

High Voltage Customers

The maintenance of electrical assets owned by High Voltage Customers is the responsibility of the owner. These requirements are detailed in Endeavour Energy's High Voltage Operating Protocols, however in addition, Endeavour Energy writes to High Voltage Customers, annually, advising them of the need to undertake inspections of their equipment and their responsibility for rectifying any defects capable of initiating a fire prior to the start of the bush fire danger period.

The High Voltage Customers are requested to formally advise Endeavour Energy that the inspection and rectification of defects have been completed. Where inspections are not completed or defects are outstanding, Endeavour Energy identifies suitable actions to reduce the likelihood of a High Voltage Customer network fault causing a bushfire ignition, including disconnection of supply during high fire risk weather conditions.

Table B.1 Aerial consumers mains on bush fire prone private land (HV and LV)

Performance measure	Current reporting period		Last reporting period		Two periods ago		Three periods ago		Four periods ago	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Private LV lines ^a checked by the network operator	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Number of directions for bush fire risk mitigation issued to LV customers by the network operator ^b	N/A	36	N/A	42	N/A	73	N/A	52	N/A	411
Number of directions for bush fire risk mitigation issued to LV customers by the network operator that have exceeded the timeframe for rectification specified in the direction notice and remain unresolved	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0
HV customers (metering point count) advised to undertake pre-season bush fire checks in accordance with ISSC 31 ^c	73	73	84	84	84	84	90	90	89	89
HV customers (metering point count) providing statements of compliance in accordance with ISSC 31	73	73	75	73	84	47	90	79	89	83
HV customers (metering point count) requiring additional risk mitigation prior to start of the reporting year	N/A	19	0	2	0	1	0	11	0	6
HV customers (metering point count) where additional risk mitigation has been completed prior to start of the reporting year	N/A	19	2	2	1	0	11	0	6	0

^a Private lines mean aerial consumers mains on bush fire prone private land. Network operators may report in terms of numbers of LV installations, or the numbers or percentage of areas targeted and checked.

^b Refers to directions issued under section 53C of the Electricity Supply Act 1995.

^c Industry Safety Steering Committee Guideline for the Management of Private Overhead Lines (ISSC 31).

^d Includes the number of high voltage customers who did not provide a statement of compliance or had identified defects requiring mitigation, where the network operator is ensuring appropriate risk mitigation (e.g. inspection by the network operator).

Table B.2 Pre-Summer bushfire inspections

Pre-summer bushfire inspections	Population (spans/poles)	Target	Achieved	Outstanding	Comments
Inspections (poles)	180,666	180,666	180,659	7	7 poles were outstanding for capture as of the 30 September. These were reviewed and no poles were outstanding as of 11 October.

Case study – Drone aerial inspections

During 2024 bushfire preparation, Endeavour Energy replaced helicopters with drones for its annual powerline safety inspections. This shift was driven by the quest for greater efficiency, speed, and precision.

As part of its Bushfire Readiness Program, Endeavour Energy traditionally inspects over 13,000 kilometres of powerlines in bushfire-prone areas every year, making necessary maintenance and tree pruning adjustments before the bushfire season begins.

“Previously, helicopters were the go-to choice for these inspections, but they posed challenges around safety, environmental impact and noise levels and their potential impact on customers, particularly those with livestock,” said Steve Lette, Endeavour Energy, Head of Digital and Insights.

“These innovative drones boast autonomous flying capabilities, enabling them to navigate pre-programmed routes while avoiding obstacles under the vigilant monitoring and control of a licensed drone operator. They capture precise images of electrical assets, even in hard-to-reach locations. This transition aligns with Endeavour Energy’s commitment to evolving and improving network management to ensure customer safety, reliable electricity supply, and affordability”.

The drones captured close-up imagery that identified defects not easily identifiable from the helicopter images.



Figure 3 - Drone image



Figure 4 - Helicopter image

The use of Drones this year enabled efficient capture with enhanced images identifying more defects while reducing CO₂ emissions by 75%. The program was a success and will be continued in future years.

Table B.3 Vegetation tasks

Network Defects

Bushfire risk category	Status	Encroachment Classification A1 ^a	Encroachment Classification A2 ^b	Encroachment Classification A3 ^c	Encroachment Classification A4 ^d
Bushfire Prone Network (Target: 31 August)	Identified	284	537	923	78
	Completed	284	537	923	78
	Open	0	0	0	0
	Outstanding	0	0	0	0
Bushfire Prone Network (Target: 30 September)	Identified	1,834	2,065	6,703	768
	Completed	1,786	2,039	6,696	768
	Open ^e	48	26	7	0
	Outstanding	79	55	10	0
Bushfire Prone Network (Target: 31 October)	Identified	0	0	1,569	284
	Completed	0	0	1,169	234
	Open	0	0	400	50
	Outstanding	0	0	400	50
Bushfire Prone Network (Target: 30 November)	Identified	0	0	1,136	462
	Completed	0	0	396	227
	Open	0	0	740	235

^a A1 – vegetation has encroached as far as 75-100% into the minimum vegetation clearance.

^b A2 – vegetation has encroached as far as 50-75% into the minimum vegetation clearance.

^c A3 – vegetation has encroached as far as 25-50% into the minimum vegetation clearance.

^d A4 – vegetation has encroached as far as 0-25% into the minimum vegetation clearance.

^e The Open status in this table refers to open defects at the 25 October, outstanding is the full amount of defects at 1 October. The outstanding figure includes the open defects.

	Outstanding	0	0	740	235
Bushfire Prone Network (Target: 31 December)	Identified	0	0	2,608	9,341
	Completed	0	0	832	3224
	Open	0	0	1,776	6,117
	Outstanding	0	0	1,776	6,117

Customer Defects

Bushfire risk category	Status	Encroachment Classification A1	Encroachment Classification A2	Encroachment Classification A3	Encroachment Classification A4
Bushfire Prone Network (Target: 31 August)	Identified	87	56	176	9
	Completed	87	56	176	9
	Open	0	0	0	0
	Outstanding	0	0	0	0
Bushfire Prone Network (Target: 30 September)	Identified	1,076	634	2,166	237
	Completed	1,043	632	2,166	237
	Open ^f	21	2	0	0
	Outstanding	33	4	0	0
Bushfire Prone Network (Target: 31 October)	Identified	0	0	194	123
	Completed	0	0	154	119
	Open	0	0	40	4

^f Open is the current open figure at the 25 of October. Outstanding is the number that were open at the 1 of October. The number of outstanding defects includes the number of open

	Outstanding	0	0	40	4
Bushfire Prone Network (Target: 30 November)	Identified	0	0	125	102
	Completed	0	0	91	88
	Open	0	0	34	14
	Outstanding	0	0	34	14
Bushfire Prone Network (Target: 31 December)	Identified	0	0	197	608
	Completed	0	0	179	497
	Open	0	0	18	111
	Outstanding	0	0	18	111

97% of A1 and A2 vegetation defects have been rectified before the due date. For the remaining and open tasks most are on track to finish by the due date. For tasks due by the end of September that are not cut network protection settings have been modified to minimise the risk of a bushfire and these have been prioritised for rectification.

Note: Hazard trees form part of the Hazard Tree Program and not part of the Bushfire Program. Therefore, these results are not included within the table B3 Bushfire Prone Vegetation tasks.

Table B.4 Asset tasks

Status	Category 1	Category 2	Category 3	Category 4	Totals
Identified	5	232	443	153	853
Completed	5	230	430	147	847
Open	0	0	0	0	0
Outstanding	0	0	6	0	6

An increased number of defects have been identified during PSBI flights using drones. The six Category 3 defects were completed in October 2024 after being delayed due to major storm events and unsafe access during the September period. Five out of the six outstanding defects were completed within the first week of October. All six have now been completed. Asset tasks identified is the quantity of defects requiring attention following Endeavour Energy’s review of the defects received from the PSBI contractor’s defect identification process. An experienced pole inspector/auditor undertook a detailed review of each defect identified by the PSBI contractor to assess for consistency with the Defect Handbook (MMI 0002). Findings from this review process will be used to refine the PSBI contractor’s defect identification processes in future programs. Any defects identified after the start of the bushfire season will be rectified as a priority.

Defect Categorisation (source: SMI 124 - Maintenance data entry and defect prioritisation)

- Category 1:** Defects that pose a direct and immediate risk to safety of the public/staff, and/or to the network availability, requiring diversion of resources to isolate supply if required and control/repair the defect.
- Category 2:** Defects that pose risks to safety of the public/staff, and/or the network availability, where the asset condition is such that a response in a period materially less than the business-as-usual processes for arrangement of isolations, materials ordering, and resource allocation is required.
- Category 3:** Defects that pose a non-immediate risk to the safe and/or reliable operation of the network over the short term and would be prioritised for action during this period using the business-as-usual processes.
- Category 4:** These defects do not impose a level of risk that warrants an escalated priority response but do represent a risk which needs to be managed and resolved in the medium term.

Glossary

Reporting requirements

Glossary

Term	Definition
Assisted failure	Any functional failure of a piece of equipment (component of an asset or asset) where the equipment was subject to an external force or energy source against which the network operator's standards for design and maintenance do not attempt to control.
Fire	<p>A state, process, or instance of combustion in which fuel or other material is ignited and combined with oxygen, giving off light, heat and flame. This includes 'smouldering' or 'smoke' events, and LV wires down events resulting in burning around the point of contact on a combustible surface. Excludes LV wires down arcing events on non-combustible surfaces.</p> <p>Network Scope: Applicable to any fire caused by, or impacting, a network asset.</p>
Functional failure	<p>Performance of a piece of equipment (or component of an asset or asset) that represents a reduction below acceptable limits of the specification for a piece of equipment resulting in reduced capability required for service. In general, a functional failure is represented by a defect condition where the equipment that is required for service can no longer perform its expected function and which results in an unplanned maintenance action to restore condition to an acceptable limit.</p> <p>Note: operation of protection equipment (e.g. fuse) within its design characteristics is not a functional failure.</p>
Incident	Defined in accordance with IPART's Electricity networks reporting manual - Incident reporting, available on the IPART website.
Major incident	Defined in accordance with IPART's Electricity networks reporting manual - Incident reporting, available on the IPART website.
Network worker	A person who has been authorised by the network operator to plan or conduct work on or near the network. Includes persons employed by the network, persons engaged under a contract by the network operator, and persons authorised by the network operator and working for an Accredited Service Provider.
Open (with respect to defects/tasks)	A defect/task that has not been rectified by the network operator but where the time that has elapsed since being identified has not exceeded the standard time that the network operator has set for having the defect rectified.
Outstanding (with respect to effects/tasks)	A defect/task that has not been rectified by the network operator where the time that has elapsed since being identified has exceeded the standard time that the network operator has set for having the defect rectified
Public worker	A party or parties that are conducting work that is not directly associated with the electricity network such as building work, landscaping, landfill work, excavations, road

	works and includes the construction, maintenance, adjustment or dismantling of mobile plant and scaffolding.
Network SAPS	Stand-alone power systems, which consist of a distribution system owned, controlled or operated, or proposed to be owned, controlled or operated, by a network operator.
Unassisted failure	Any functional failure of a piece of equipment (component of an asset or asset) where the cause of the failure is of a type for which the network operator's design and maintenance standards include specific controls to mitigate against the risk of failure and which is neither an assisted failure nor a maintenance induced failure. These failures are generally caused by a deterioration of the condition of the equipment and also include overhead connection failures and vegetation within the mandatory vegetation clearance window.

