

# Annual Network Safety Performance Objectives 2019

30 November 2019



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## 1. Context and Purpose

This Statement has been prepared and published under regulation 31 of the *Electricity (Network Safety) Regulations 2015*, which require Western Power to publish annual Objectives for a specified set of network safety performance incident types, expressed as the maximum number of incidents of that type expected to occur. This Statement covers the financial years 2019/20, 2020/21 and 2021/22.

## 2. Establishing Objectives

The Objectives in the attached table are the number expected annually for each network incident type specified in the *Regulations*. The same annual numbers apply for all three years covered by this Statement. Western Power has used a trend-based methodology to establish these Objectives, which takes into account historical performance, anticipated levels of funding, and planned construction and maintenance programs over this period. For further details, refer to the Appendix.

### 3. ANSPO 2019

Description of incident type		Annual Objective 1 July 2019 to 30 June 2022
30(1) (a): a discharge of electricity from the network that causes the electric shock, injury or death of a person or the death of livestock	Human fatality	0
	Human injury	8 (0.8 per 10,000 energised circuit km)
	Livestock fatality	6 (0.6 per 10,000 energised circuit km)
	Electric shock, no injury	177 (17.3 per 10,000 energised circuit km)
30(1)(b): an incident caused by the network, other than a fire, that causes damage to property other than to the network		4 (0.4 per 10,000 energised circuit km)
30(1)(c): a fire caused by the network that causes damage to property other than to the network		10 (1.0 per 10,000 energised circuit km)
30(1)(d)(i): a fire, on a wood pole that is a part of the <u>distribution</u> network, that originated on the pole		429 (7.0 per 10,000 distribution poles)
30(1)(d)(ii): a fire, on a wood pole that is a part of the <u>transmission</u> network, that originated on the pole		15 (5.7 per 10,000 transmission poles)
30(1)(e)(i): the contacting of 2 or more conductors of the <u>distribution</u> network, of different phases, caused by temperature variations or wind		107 (15.8 per 10,000 energised distribution overhead circuit km)

Description of incident type	Annual Objective 1 July 2019 to 30 June 2022
30(1)(e)(ii): the contacting of 2 or more conductors of the <u>transmission</u> network, of different phases, caused by temperature variations or wind	1 (1.3 per 10,000 energised transmission overhead circuit km)
30(1)(f)(i): an unassisted failure of a <u>hardwood</u> pole that is part of the <u>distribution</u> network	365 (5.9 per 10,000 distribution poles)
30(1)(f)(ii): an unassisted failure of a <u>softwood</u> pole that is part of the <u>distribution</u> network	5 (0.1 per 10,000 distribution poles)
30(1)(f)(iii): an unassisted failure of a <u>steel</u> pole that is part of the <u>distribution</u> network	1 (0.8 per 10,000 distribution poles)
30(1)(f)(iv): an unassisted failure of a <u>steel</u> streetlight pole	66 (4.5 per 10,000 steel streetlight poles)
30(1)(f)(v): an unassisted failure of a <u>concrete</u> pole that is part of the <u>distribution</u> network	1 (0.8 per 10,000 distribution poles)
30(1)(f)(vi): an unassisted failure of a <u>composite fibre, aluminium, or any other type of</u> pole that is part of the <u>distribution</u> network	NA

Description of incident type	Annual Objective 1 July 2019 to 30 June 2022
30(1)(f)(vii): an unassisted failure of a <u>hardwood</u> pole that is part of the <u>transmission</u> network	20 (7.5 per 10,000 transmission poles)
30(1)(f)(viii): an unassisted failure of a <u>softwood</u> pole that is part of the <u>transmission</u> network	0 (0 per 10,000 transmission poles)
30(1)(f)(ix): an unassisted failure of a <u>steel</u> pole that is part of the <u>transmission</u> network	1 (0.8 per 10,000 transmission poles)
30(1)(f)(x): an unassisted failure of a <u>concrete</u> pole that is part of the <u>transmission</u> network	1 (0.8 per 10,000 transmission poles)
30(1)(f)(xi): an unassisted failure of a <u>composite fibre, aluminium, or any other type of pole</u> that is part of the <u>transmission</u> network	NA
30(1)(g)(i): an unassisted failure of an overhead conductor that is part of the <u>distribution</u> network	328 (48.3 per 10,000 energised distribution overhead circuit km)
30(1)(g)(ii): an unassisted failure of an overhead conductor that is part of the <u>transmission</u> network	2 (2.6 per 10,000 energised transmission overhead circuit km)
30(1)(h)(i): an unassisted failure of a stay wire that is part of the <u>distribution</u> network	208 (13.2 per 10,000 distribution stay wires)

Description of incident type	Annual Objective 1 July 2019 to 30 June 2022
30(1)(h)(ii): an unassisted failure of a stay wire that is part of the <u>transmission</u> network	3 (3.5 per 10,000 transmission stay wires)
30(1)(i)(i): an unassisted failure of an underground cable that is part of the <u>distribution</u> network	3 (1.1 per 10,000 energised distribution underground circuit km)
30(1)(i)(ii): an unassisted failure of an underground cable that is part of the <u>transmission</u> network	1 (0.02 per total energised transmission underground circuit km)



## 4. Appendix – Western Power ANSPO Methodology

### 4.1 Introduction

Annual Network Safety Performance Objectives (ANSPO) is a statement which needs to be published under regulation 31 of the Electricity (Network Safety) Regulations 2015. The regulation requires Western Power to annually publish a three year forecast for a specified set of network safety incident types, providing external visibility of the public safety risk posed by the network. ANSPO 2019 covers the financial years 2019/20, 2020/21 and 2021/22.

### 4.2 Context

Western Power's objective is to provide its customers with safe, reliable and efficient access to its electricity network. It focuses on providing agreed levels of service at the lowest practical cost, while minimising harm to the public, our workforce and the environment, and damage to property.

Western Power manages its electricity network in line with an asset management system. The system meets the requirements of the Australian Standard for Electricity Network Safety Management System (AS5577) and the International Standard for Asset Management Systems (ISO55001). The asset management system is aligned with the requirements of the Economic Regulation Authority of Western Australia (ERA). The mix of asset management capability, technological capability, and a culture of innovation and continual improvement positions Western Power to deliver on its business objectives.

An integral part of providing an electricity network service is the investment in asset treatment programs (inspection, repair, maintenance and replacement) centred around identifying and mitigating safety risks on the network assets including poles, towers, conductors and substations. This risk-based approach complies with AS5577 and ISO55001 and includes consideration of the asset condition and the potential of the asset to cause a safety or reliability consequence if failure occurs. Under this approach, it is important to note that the number of failures of a particular asset may vary without a change in the underlying risk.

### 4.3 Methodology

Western Power's methodology for setting the ANSPO is based on the average of the last three annual results plus two standard deviations, moderated with engineering judgement to set a suitable upper limit for expected performance. For low frequency incident types not amenable to statistical treatment, the methodology applies engineering judgement and historical performance to set a suitable upper limit for expected performance. Factors considered within engineering judgement include, but are not limited to:

- Evident trends in the historical performance data for each incident type.
- Changes in the type or quantity of treatments in future investment plans that materially affect the likelihood of each incident type.
- Changes in the environment, demographics or other external factors that materially affect the likelihood of each incident type.
- Emerging technical issues affecting particular asset types that materially affect the likelihood of each incident type.

The methodology is robust, defensible and produces an appropriate picture of the likely upper limit of performance in each of the ANSPO categories.

## 4.4 Highlights of ANSPO 2019

ANSPO 2019 has minimal change from ANSPO 2018 figures, with the following highlights:

- Improvements in several figures for ANSPO 2019, most notably 30(1)(a) electric shocks with no injury, 30(1)(d)(i) fires on distribution poles, and 30(1)(g)(i) unassisted failure of distribution overhead conductor.
- Objective 30(1)(e)(i) – the forecast for contacting of 2 or more conductors of the distribution network is now calculated using statistical methods as described above. Further refinement may be required when the results of the recent Light Detection and Ranging (LiDAR) survey of the overhead network are fully evaluated (expected to be in early 2020).
- Objective 30(1)(f)(i) – the forecast for unassisted failure of distribution hardwood poles has been maintained at the level set in 2018. This reflects wood pole investment plans across Access Arrangement 4 (AA4).
- Objective 30(1)(f)(iv) – the forecast for unassisted failure of a steel streetlight pole has increased marginally (2018: 65, 2019: 66). This is primarily due to variance in reported failures over the last three years and will be monitored to determine if the statistical approach is suitable for this category.
- Objective 30(1)(g)(i) – the forecast for unassisted failure of an overhead conductor that is part of the distribution network is now calculated using statistical methods as described above.
- Objective 30(1)(h)(i) and Objective 30(1)(h)(ii) – the forecasts for unassisted failures of stay wires have increased marginally (distribution – 2018: 166, 2019: 174; transmission – 2018: 2, 2019: 3). Western Power are currently reviewing performance of stays in both the distribution and transmission network. If changes to the investment plans across AA4 and AA5 are warranted the objectives will be reviewed to reflect this.
- Objective 30(1)(i)(i) and 30(1)(i)(ii) – Western Power has historically only forecast and reported unassisted failure of underground cables associated with electric shocks. This approach has been used for ANSPO 2019 but, following improvements to data structures, Western Power intends to commence forecasting and reporting of all unassisted failures of underground cables from ANSPO 2020.