Annual Network Safety Performance Objectives 2018

30 November 2018

Contents

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 2018/19, 2019/20 and 2020/21.

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 2018

Description of incident type		Annual Objective 1 July 2018 to 30 June 2021
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	184 (18.0 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 distribution network, that originated on the pole		438 (7.0 per 10,000 distribution poles)
30(1)(d)(ii): a fire, on a wood pole that is a part of the transmission 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 distribution network, of different phases, caused by temperature variations or wind		130 (19.1 per 10,000 energised distribution overhead circuit km)

Description of incident type	Annual Objective 1 July 2018 to 30 June 2021
30(1)(e)(ii): the contacting of 2 or more conductors of the transmission 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 hardwood pole that is part of the distribution network	365 (5.9 per 10,000 distribution poles)
30(1)(f)(ii): an unassisted failure of a softwood pole that is part of the distribution network	5 (0.1 per 10,000 distribution poles)
30(1)(f)(iii): an unassisted failure of a steel pole that is part of the distribution network	1 (0.8 per 10,000 distribution poles)
30(1)(f)(iv): an unassisted failure of a steel streetlight pole	65 (4.4 per 10,000 steel streetlight poles)
30(1)(f)(v): an unassisted failure of a concrete pole that is part of the distribution network	1 (0.8 per 10,000 distribution poles)
30(1)(f)(vi): an unassisted failure of a composite fibre, aluminium, or any other type of pole that is part of the distribution network	NA
30(1)(f)(vii): an unassisted failure of a hardwood pole that is part of the transmission network	20 (7.5 per 10,000 transmission poles)

Description of incident type	Annual Objective 1 July 2018 to 30 June 2021
30(1)(f)(viii): an unassisted failure of a softwood pole that is part of the transmission network	0 (0 per 10,000 transmission poles)
30(1)(f)(ix): an unassisted failure of a steel pole that is part of the transmission network	1 (0.8 per 10,000 transmission poles)
30(1)(f)(x): an unassisted failure of a concrete pole that is part of the transmission network	1 (0.8 per 10,000 transmission poles)
30(1)(f)(xi): an unassisted failure of a composite fibre, aluminium, or any other type of pole that is part of the transmission network	NA
30(1)(g)(i): an unassisted failure of an overhead conductor that is part of the distribution network	341 (50.2 per 10,000 energised distribution overhead circuit km)
30(1)(g)(ii): an unassisted failure of an overhead conductor that is part of the transmission 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 distribution network	166 (10.5 per 10,000 distribution stay wires)
30(1)(h)(ii): an unassisted failure of a stay wire that is part of the transmission network	2 (3.5 per 10,000 transmission stay wires)

Description of incident type	Annual Objective 1 July 2018 to 30 June 2021
30(1)(i)(i): an unassisted failure of an underground cable that is part of the distribution 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 transmission 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 2018 covers the financial years 2018/19, 2019/20 and 2020/21.

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 Australian Standard for Electricity Network Safety Management System (AS5577). The asset management system is aligned with the requirements of 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 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 Background

The first ANSPO was published in 2015. The forecast methodology adopted was based on the maximum observed result for each incident type within the recent, comparable historic data (at that time the last three years FY2012/13, FY2013/14 & FY2014/15). The same basic methodology has been applied in ANSPO 2016 and ANSPO 2017, extending the data set to include the additional year of historic data on each occasion, and introducing moderation based on engineering judgement to incorporate factors such as known trends, asset condition and investment plans. This approach positions ANSPO as an expected upper limit for the frequency of the defined incident types.

4.4 Adopted Methodology in ANSPO 2018

In light of increasing maturity in Western Power's risk-based asset management approaches and availability of more historical information since ANSPO reporting began in 2015, Western Power has refreshed its methodology for setting the ANSPO 2018. This includes applying a consistent statistical approach to predict asset failure, supported with engineering judgement to set an upper limit of forecast failures.

The new methodology 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.

4.5 Highlights of ANSPO 2018

The approach has generally reduced or maintained previous ANSPO figures, with the following highlights:

- Improvements in several figures for ANSPO 2018, most notably 30(1)(a) electric shocks with no injury, 30(1)(d)(i) pole top fires and 30(1)(f)(iv) unassisted streetlight metal pole failures.
- Objective 30(1)(b) and 30(1)(c) – the forecasts for property damage from an incident or a fire caused by the network is reduced due to the application of a revised $20,000 threshold for property damage from 01 Jul 2018.
- Objective 30(1)(f)(i) – a 5% reduction in unassisted distribution hardwood pole failures, despite the new ANPSO methodology indicating a small increase would be appropriate. This reflects wood pole investment plans across Access Arrangement 4 (AA4) and anticipated improvement in pole failure performance towards the end of AA4 or into AA5. The statistical methodology for setting ANSPO will enable capturing and monitoring the performance of the AA4 investment for distribution wood poles, suitability of the ANSPO target and the effectiveness of the new methodology.
- Objectives 30(1)(e)(i) and 30(1)(g)(i) – the forecast for contacting of 2 or more conductors of the distribution or transmission network remains unchanged. The forecasts will be reassessed when results of the LiDAR survey (currently in progress) are available in 2019.
- 30(1)(f)(viii) unassisted transmission softwood pole failures –The population of this asset is small and that they are relatively young. The probability of an unassisted failure is therefore low but non-zero. This possibility was not adequately captured in previous ANSPO submissions, which set an NA against this objective. The ANSPO 2018 figure has therefore been set to 0 and will monitor future performance and adjust accordingly.