



Jemena Electricity
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15 April 2016

Mr Chris Pattas
General Manager
Networks Investment and Pricing
Australian Energy Regulator
GPO Box 520
Melbourne VIC 3001

Dear Mr Pattas,

**Fire start reports under clause 5 of the F-factor Scheme Order 2011 for
Jemena Electricity Networks**

Jemena Electricity Networks is required to submit fire start reports to the Australian Energy Regulator for each year based on the outcomes of the previous regulatory year.

The fire starts report for 2015 is set out in Attachment 1.

If you have questions in relation to this report or would like to discuss further, please contact the Networking Integrity and Performance Manager, Paul Garnish on (03) 9173 8439 or by email at paul.garnish@jemena.com.au.

Yours sincerely,

A handwritten signature in black ink, appearing to be "JE", written over a horizontal line.

Johan Esterhuizen
General Manager Asset Strategy Electrical

Attachment 1

Jemena Electricity Networks Fire Start Report for 2015

1. Background

Under clause 5(1) of the F-factor Scheme 2011 (**F-factor Order**), Jemena Electricity Networks (**JEN**) is required to submit fire start reports to the Australian Energy Regulator each year based on the outcomes of the previous regulatory year.

JEN identify, monitor, analyse, investigate and report on all known fires related to its electricity network assets. Recommendations arising out of the investigations are assigned to responsible persons for implementation. Fire starts are internally reported as well as being reported to relevant external authorities.

2. Analysis

An analysis of the fire starts on the JEN network in 2015 identified that:

- 61.1% of all fire starts did not result in grass or vegetation fires;
- 53.7% of all fire starts were pole top and cross-arm fires whilst a further 5.6% were contained within public lighting assets; and
- 94.4% of all fire starts occurred within the Country Fire Authority (**CFA**) designated low bushfire risk area;
- Fire starts caused by trees, animals and lightning strikes were relatively low:
 - 5.6% of fire starts were caused by a tree, or part of a tree, falling upon or coming into contact with the distribution system;
 - 9.3% of fire starts were caused by a person, bird, reptile or other animal coming into contact with the distribution system; and
 - There were no fire starts caused by lightning striking the distribution system.

JEN is committed to working towards reducing the number of pole top fires across the network in the most efficient and cost effective manner. It is noteworthy, pole top and cross-arm fire mitigation is a key program of work in JEN to achieve the strategic objectives relating to safety, environment, network reliability, supply quality and maintaining network asset value.

Condition monitoring of pole top structures and replacement program is an essential part of JEN's management of these asset classes. JEN has programs in place to reduce the population of sub-transmission (**ST**) and high-voltage (**HV**) timber cross-arms, replacing them with steel, and the implementation of pole top hardware, such as polymeric insulators, all aimed at reducing the instance of pole top fires.

JEN uses a camera mounted on an insulated telescopic pole to provide asset inspectors and maintenance planners with the ability to more accurately assess pole top hardware using high quality images taken from above.

JEN is trialling an early partial discharge detection technology on a 22kV feeder as a possible means of reducing the risk of pole top fire starts. The Early Fault Detection system promises to provide early pole top fire warnings provided appropriate threshold detection levels can be determined and established.

JEN committed in 2010 to replace (ST and HV wood cross-arms with steel cross-arms) 2,835 pole top structures over the 2011-15 period as part of its pole top fire mitigation program as well as an additional 14,117 pole top structures based on age and condition (which concurrently reduces pole top fire risks). At the completion of these two programs a very high correlation was achieved with 2,834 and 12,471 pole top structures being replaced respectively.

It is noteworthy that pole top fire events are highly dependent on environmental conditions. A specific sequence of conditions generally increases the instances of pole top fires on electricity network. Typically, high numbers of fires occur after prolonged periods of hot dry weather where wooden structures are very dry and there is usually high level of air borne pollutants. The air pollutants are generally from very dry land conditions where the soil has been exposed and any nearby bushfires. The first light rain that falls after the dry period on the dust covered pole top insulators slight wets the pollutants and cause arcing between the electricity conductors and the wooden structures. The arcing causes pole top fires. It is this unique combination of dust and light rain, which is not sufficient to wash away the dust completely, that causes these pole top and cross-arm fires.

The number of fire starts in 2015 continues to be dominated by pole top fires. With the correlation between weather and pole top fires the number of fire starts in 2015 are down on 2014 numbers.

3. Definitions

JEN is informed by the following definitions in the preparation of this fire start report.

Fire Hazard (Danger) Rating

JEN has utilised the CFA Fire Danger Ratings as defined and published on the CFA website.

Bushfire Risk Area

JEN has used the definition of hazardous bushfire risk area in the Electricity Safety Act 1998.

Hazardous bushfire risk area means an area:

- (a) to which a fire authority has assigned a fire hazard rating of "high" under section 80, whether or not the area is an urban area; or
- (b) that is not an urban area (other than an area a fire control authority has assigned a fire hazard rating of "low" under section 80);

Feeder Classifications

JEN has utilised the feeder classifications that have been defined for the service target performance incentive scheme (STPIS). Feeders are classified as central business district (CBD), Urban, Rural Short or Rural Long. JEN's network contains only Urban and Rural Short feeders. The STPIS definitions are:

- (a) CBD – supplies predominantly high rise commercial buildings, supplied by a predominantly underground distribution network containing significant interconnection and redundancy compared to urban areas;
- (b) Urban – not a CBD feeder, with actual maximum demand over the reporting period per total feeder route length greater than 0.3 MVA/km;
- (c) Rural short – not a CBD or Urban feeder with a total feeder route length less than 200km and;
- (d) Rural long – not a CBD or Urban feeder with a total feeder route length greater than 200km

Fire Start by Asset and Fire Start by Category

JEN has utilised the fire start by asset definitions in accordance with Energy Safe Victoria (ESV) reporting guidelines. These are documented in "Distribution Business Electrical Safety Performance Reporting Guidelines, July 2014"

Kind of Fire Start

JEN has used the fire start definition under Clause 4 of F-factor Order. Under clause 4 of the F-factor Order, fire starts covered by an F-factor scheme determination are any fire:

- (a) that starts in or originates from a distribution system;
- (b) Started by any tree, or part of a tree, falling upon or coming into contact with a distribution system;
- (c) Started by any person, bird, reptile, or other animal in or on a distribution system;
- (d) Started by lightning striking a distribution system or a part of a distribution system; and
- (e) Started by any other thing forming part of or coming into contact with a distribution system; or
- (f) Otherwise started by a distribution system.

Additionally, JEN has used the definition on 'fire' in the AER regulatory information notice (RIN) template:

"Fire" should be interpreted using its common meaning and can be defined as a process in which substances combine chemically with oxygen from the air and typically give out bright light, heat and smoke. A fire should be recorded where there is evidence of smoking, charring, scorching, burning or any other evidence that a fire had occurred.

4. Number of fire starts

JEN has summarised the data into tables to show the percentage and actual number of fire starts in the following categories:

- CFA Fire Hazard Rating
- Bushfire Risk Area
- Feeder Classification
- Fire Start by Category

- Kind of Fire Start
- Fire Start by Asset

Table 1: Number of fire starts by Fire Hazard Rating

CFA Fire Hazard Rating (weather conditions on the day of the fire)	No of Fires	% of Fires
Extreme	4	7
Severe	0	0
Very high	5	9
High	19	35
Low-moderate	21	39
Unavailable ¹	5	9
Total	54	100

Table 2: Number of fire starts by Bushfire Risk Area

Bushfire Risk Area	No of Fires	% of Fires
Hazardous Bushfire Risk Area (HBRA)	3	6
Low Bushfire Risk Area (LBRA)	51	94
Total	54	100

Table 3: Number of fire starts by Feeder Classification

Feeder Classification	No of Fires	% of Fires
Rural	2	4
Urban	52	96
Total	54	100

Table 4: Number of fire starts by Category

Fire Start by Category	No of Fires	% of Fires
Asset failures resulting in asset fire (no grass/vegetation fire)	33	61
Asset failures resulting in grass / vegetation fire	12	22
Grass/vegetation fires from assets (non-asset failures)	9	17
Total	54	100

Table 5: Number of fire starts by Kind of Fire Start (as defined by the F factor Order)

Kind of Fire Start	No of Fires	% of Fires
Started by any tree, or part of a tree, falling upon or coming into contact with a distribution system	3	6
Started by any person, bird, reptile or other animal coming into contact with a distribution system	5	9
Started by lightning striking a distribution system or a part of a distribution system	0	0
Started by any other thing forming part of or coming into contact with a distribution system	46	85

¹ Fire Hazard Ratings are only maintained by the Bureau of Meteorology for the period January to April and October to December 2015

Otherwise started by a distribution system	0	0
Total	54	100

Table 6: Number of fire starts by Asset

Fire Start by Asset	No of Fires	% of Fires
Any additional fires, caused by any asset failure, not reported to the ESV and required to be reported by the f-factor Order	0	0
Any fire triggered by any asset failure caused by Lightning	0	0
Fire starts in grass/vegetation resulting from animal contact with network assets	2	4
Fire starts in grass/vegetation resulting from other causes (vehicle strikes, vandalism etc)	4	7
Fire starts in grass/vegetation resulting from trees contacting network assets	3	6
HV Fuse Failure (including 'hang-ups' and 'candling')	3	6
Oil-filled plant fire	0	0
Other assets ²	13	24
Pole and cross-arm failure or Pole and cross-arm fire	29	54
Total	54	100

² Other Assets includes: 4 overhead services, 3 public lighting, 1 conductor connector, 2 connection boxes, 1 bridge, 1 pillar and 1 overhead conductor.

5. Table of all Fire Starts in 2015

Fire Start No	Date	Time	Location	Fire Start by ESV category	Fire Start by Asset	Kind of Fire Start by F-factor Order - Clause 4
Fire Start 1	1/01/15	07:55	8 Birdwood Ave, Macleod	Asset failures resulting in grass/vegetation fire	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 2	3/01/15	11:11	Lot 1 Plumpton Rd, Sydenham	Asset failures resulting in asset fire (no grass/vegetation fire)	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 3	3/01/15	14:35	94 Dunvegan St, Heidelberg North	Grass/vegetation fires from assets (non-asset failures)	Fire starts in grass/vegetation resulting from trees contacting network assets	Started by any tree, or part of a tree, falling upon or coming into contact with a distribution system
Fire Start 4	4/01/15	02:47	130 Martins Lane, Viewbank	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 5	4/01/15	20:38	125-175 Patullos Lane, Somerton	Asset failures resulting in grass/vegetation fire	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 6	6/01/15	12:49	73 Russell St, Campbellfield	Asset failures resulting in grass/vegetation fire	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 7	6/01/15	14:14	1/52 Crookston Rd, Reservoir	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 8	11/01/15	17:07	21 North Rd, Reservoir	Asset failures resulting in grass/vegetation fire	Pole and cross arm failure or Pole and cross arm fire	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 9	27/01/15	00:42	237 Essex St, West Footscray	Asset failures resulting in asset fire (no grass/vegetation fire)	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 10	1/02/15	4:25	Cnr Swanston St & Collins St, Williamstown	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 11	1/02/15	12:38	75 Sterling Dve, Keilor East	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 12	1/02/15	10:47	81 Sterling Dr, Keilor East	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system

Fire Start No	Date	Time	Location	Fire Start by ESV category	Fire Start by Asset	Kind of Fire Start by F-factor Order - Clause 4
Fire Start 13	1/02/15	01:01	1 Rayner St, Footscray	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 14	1/02/15	05:50	102 Rosamond Rd, Maribyrnong	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 15	1/02/15	08:21	Cnr of Arcade Way & North Rd, Avondale Heights	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 16	1/02/15	08:21	90 The Crossway, Keilor East	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 17	6/02/15	19:18	10 Yarra Ave, Reservoir	Asset failures resulting in grass/vegetation fire	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 18	14/02/15	17:10	Cnr of McDonald Rd & Geelong Rd, Brooklyn	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any person, bird, reptile or other animal coming into contact with a distribution system
Fire Start 19	16/02/15	11:00	22 Syndal St, Fawkner	Asset failures resulting in grass/vegetation fire	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 20	13/02/15	19:28	128 Slater Pde, East Keilor	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 21	13/02/15	19:35	57 Cheddar Rd, Reservoir	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 22	19/02/15	03:12	365 Gaffney St, Pascoe Vale	Asset failures resulting in asset fire (no grass/vegetation fire)	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 23	22/02/15	16:50	43 Griffiths St, West Heidelberg	Asset failures resulting in grass/vegetation fire	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 24	23/02/15	15:06	10 Nottingham St, Kensington	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system

Fire Start No	Date	Time	Location	Fire Start by ESV category	Fire Start by Asset	Kind of Fire Start by F-factor Order - Clause 4
Fire Start 25	28/02/15	21:05	50 Newlands Rd, Reservoir	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 26	1/03/15	15:33	1366-1496 Melton Hwy, Plumpton	Asset failures resulting in grass/vegetation fire	HV Fuse	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 27	8/03/15	14:05	65 Regent St, Preston	Grass/vegetation fires from assets (non-asset failures)	Fire starts in grass/vegetation resulting from other causes (vehicle strikes, vandalism etc)	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 28	8/03/15	14:05	35 Arthur St, Coburg	Grass/vegetation fires from assets (non-asset failures)	Fire starts in grass/vegetation resulting from other causes (vehicle strikes, vandalism etc)	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 29	11/03/15	09:02	2 Western Ave, Westmeadows	Asset failures resulting in grass/vegetation fire	HV Fuse	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 30	15/03/15	17:33	332 Nicholson St, Yarraville	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 31	17/03/15	13:51	98 Mason St, Newport	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 32	24/03/15	00:35	1/6 Athol St, Braybrook	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 33	30/03/15	13:50	300 Francis St, Yarraville	Grass/vegetation fires from assets (non-asset failures)	Fire starts in grass/vegetation resulting from other causes (vehicle strikes, vandalism etc)	Started by any person, bird, reptile or other animal coming into contact with a distribution system
Fire Start 34	7/04/15	15:44	Cnr Drysdale & Greensborough, Yallambie	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 35	7/04/15	14:39	507 Melbourne Rd, Newport	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 36	8/04/15	11:15	46 Service St, Coburg	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system

Fire Start No	Date	Time	Location	Fire Start by ESV category	Fire Start by Asset	Kind of Fire Start by F-factor Order - Clause 4
Fire Start 37	15/04/15	12:43	11 Indwe St, West Footscray	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 38	9/05/15	19:53	13 Ellesmere Pde, Rosanna	Asset failures resulting in asset fire (no grass/vegetation fire)	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 39	26/05/15	09:45	58 Roberts St, Keilor East	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 40	16/07/15	10:54	Cnr White St & Rosamond Rd, Maribyrnong	Asset failures resulting in asset fire (no grass/vegetation fire)	HV Fuse Failure (including 'hang-ups' and 'candling')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 41	30/07/15	17:43	87 Liston Ave,Reservoir	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 42	27/08/15	17:00	29-31 Lakefield Av, Reservoir	Grass/vegetation fires from assets (non-asset failures)	Fire starts in grass/vegetation resulting from animal contact with network assets	Started by any person, bird, reptile or other animal coming into contact with a distribution system
Fire Start 43	10/10/15	13:47	2 Hobson St, Newport	Asset failures resulting in grass/vegetation fire	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 44	26/10/15	13:13	515 Cooper St, Somerton	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 45	3/11/15	18:56	459 Somerville Rd, Brooklyn	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 46	1/12/15	18:50	2 Ophir St, Broadmeadows	Asset failures resulting in grass/vegetation fire	Pole and cross arm failure or Pole and cross arm fire	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 47	19/12/15	14:24	Yarrabend Rd, Fairfield 3078 (Approx. 50m North of Eastern Freeway)	Grass/vegetation fires from assets (non-asset failures)	Fire starts in grass/vegetation resulting from trees contacting network assets	Started by any tree, or part of a tree, falling upon or coming into contact with a distribution system
Fire Start 48	19/12/15	14:24	24 Steele Creek Dr, Keilor East	Asset failures resulting in asset fire (no grass/vegetation fire)	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system

Fire Start No	Date	Time	Location	Fire Start by ESV category	Fire Start by Asset	Kind of Fire Start by F-factor Order - Clause 4
Fire Start 49	20/12/15	18:48	14 Snow St, Keilor Park	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 50	24/12/15	11:42	552 Barry Rd, Coolaroo	Grass/vegetation fires from assets (non-asset failures)	Fire starts in grass/vegetation resulting from trees contacting network assets	Started by any tree, or part of a tree, falling upon or coming into contact with a distribution system
Fire Start 51	26/12/15	05:17	2 Hocking St, Coburg	Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	Started by any other thing forming part of or coming into contact with a distribution system
Fire Start 52	28/12/15	12:21	Cnr of Gilbert & Butler St, Braybrook	Grass/vegetation fires from assets (non-asset failures)	Fire starts in grass/vegetation resulting from other causes (vehicle strikes, vandalism etc)	Started by any person, bird, reptile or other animal coming into contact with a distribution system
Fire Start 53	29/12/15	18:12	425 Riddle Rd, Sunbury	Grass/vegetation fires from assets (non-asset failures)	Fire starts in grass/vegetation resulting from animal contact with network assets	Started by any person, bird, reptile or other animal coming into contact with a distribution system
Fire Start 54	31/12/15	18:45	Cnr of Waratah & Clarendon St, West Footscray	Asset failures resulting in grass/vegetation fire	Other Assets	Started by any other thing forming part of or coming into contact with a distribution system