

## F-Factor Incentive Scheme

### REVIEW OF SUBMISSIONS FROM DISTRIBUTION NETWORK SERVICE PROVIDERS

- Final V2
- 04 October 2011



## F-Factor Incentive Scheme

### REVIEW OF SUBMISSIONS FROM DISTRIBUTION NETWORK SERVICE PROVIDERS

- Final V2
- 04 October 2011

---

Sinclair Knight Merz  
ABN 37 001 024 095  
Level 5, 33 King William Street  
Adelaide SA 5000 Australia  
PO Box 8291  
Station Arcade SA 5000 Australia  
Tel: +61 8 8424 3800  
Fax: +61 8 8424 3810  
Web: [www.skmconsulting.com](http://www.skmconsulting.com)

**COPYRIGHT:** The concepts and information contained in this document are the property of Sinclair Knight Merz Pty Ltd. Use or copying of this document in whole or in part without the written permission of Sinclair Knight Merz constitutes an infringement of copyright.

**LIMITATION:** This report has been prepared on behalf of and for the exclusive use of Sinclair Knight Merz Pty Ltd's Client, and is subject to and issued in connection with the provisions of the agreement between Sinclair Knight Merz and its Client. Sinclair Knight Merz accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.



## Contents

<b>1.</b>	<b>Introduction</b>	<b>1</b>
1.1.	Background to Project	1
1.2.	Scope of Work	2
<b>2.</b>	<b>Definition of a fire start</b>	<b>3</b>
<b>3.</b>	<b>DNSP Overview</b>	<b>4</b>
3.1.	Jemena	4
3.2.	United Energy	4
3.3.	PowerCor	4
3.4.	CitiPower	4
3.5.	SPAusnet	4
<b>4.</b>	<b>Submissions</b>	<b>5</b>
4.1.	Introduction	5
4.2.	Observations	5
4.2.1	Comparison to External Sources	5
4.2.2	Attribute Correlation	6
4.2.3	Categorisation of Fire Starts	6
4.2.4	Fault Descriptions	8
4.3.	Summary	11
<b>5.</b>	<b>Interviews with DNSPs</b>	<b>12</b>
5.1.	Introduction	12
5.2.	Observations	12
5.3.	Summary	15
<b>6.</b>	<b>Conclusions</b>	<b>16</b>
<b>7.</b>	<b>Recommendations</b>	<b>18</b>





## Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Draft V1	15/9/2011	Greg Whicker		15/9/2011	Draft for Client review
Final	19/09/11		G Whicker	19/09/11	For issue to client
Final V2	04/10/11		G Whicker	04/10/11	Removes minor comment re UE/Jemena corporate structure

## Distribution of copies

Revision	Copy no	Quantity	Issued to
Draft V1	1	Electronic	AER
Final	1	Electronic	AER
Final V2	1	Electronic	AER

<b>Project manager:</b>	Greg Whicker
<b>Name of organisation:</b>	Australian Energy Regulator
<b>Name of project:</b>	F-Factor Incentive Scheme
<b>Name of document:</b>	Review of Submissions from Distribution Network Service Providers
<b>Document version:</b>	Final V2
<b>Project number:</b>	HD24261



# 1. Introduction

## 1.1. Background to Project

The following background description is based on the AER document *Consultancy Terms of Reference*, dated 29 July 2011.

The F-Factor scheme is intended to provide a financial incentive to Distribution Network Service Providers (DNSPs) to reduce the number of fire starts in their distribution networks. DNSPs will be either rewarded or penalised for performing better or worse than this target. For the first regulatory control period, the incentive rate is \$25,000 per fire that differs from the DNSP's start fire target.

The Victorian Parliament passed the Energy and Resources Amendment Act 2010 which amended the National Electricity (Victoria) Act 2005 (NEVA). This amendment is intended to confer additional functions and powers, or impose duties on Australian Energy Regulator to implement the F-Factor scheme.

These additional powers are conferred through the F-Factor Scheme Order 2011, Order in Council (OIC). The OIC specifies that, in making an F-Factor scheme determination the AER must follow the distribution consultation procedures, which includes a 6 week consultation period after the publication of a draft determination.

The OIC requires that the AER make the first F-Factor determination by no later than 31 December 2011, to take effect from 2012. The key task for the AER in making this determination is to determine the fire target. The fire start targets will be based on the average of the actual fire starts during the period 2006-10, where suitable information is available.

DNSP's have advised AER staff that:

- They have not been recording fire starts in the manner prescribed by the OIC; and
- Prior to 2010, the reporting requirement only related to fires that had an impact greater than 0.3 hectares in area or \$5000 in property damages.

The AER engaged SKM to provide specialist technical advice in assessing claims by the DNSPs regarding estimation of unrecorded historical fire starts.



## **1.2. Scope of Work**

SKM was engaged by the AER to provide specialist technical advice on:

- The validity and reasonableness of the assumptions and methodologies proposed by DNSPs regarding estimation of unrecorded fire starts; and
- What should be fair and reasonable assumptions, and methodologies for adjusting DNSP claims for unrecorded fire starts, should some or all of the DNSPs' estimations not be considered reasonable.

In addition<sup>1</sup> SKM was requested to:

- Provide comments on DNSPs' record management systems, in terms of accuracy and compliance with OIC fire definition;
- Provide comments on whether the data are likely to be over, under, or accurately stating the fire start history;
- Organise meetings with the DNSPs and prepare questions to assist in evaluating their claims.

This report summarises the analysis and review conducted by SKM in accordance with the scope of work.

---

<sup>1</sup> The last three items were requested in an email request from AER to SKM dated 30/8/2011



## 2. Definition of a fire start

The Cambridge Dictionary defines fire as “heat, light and flames that are made when something burns”.

Wikipedia<sup>2</sup> defines “fire” as “the rapid oxidation of a material in the chemical process of combustion, releasing heat, light, and various reaction products”. Slower oxidative processes like rusting or digestion are not included by this definition.

The flame is the visible portion of the fire and consists of glowing hot gases. If hot enough, the gases may become ionized to produce plasma. Depending on the substances alight, and any impurities outside, the colour of the flame and the fire's intensity will be different.

In the Victorian Government Gazette, 23 June 2011 and the OIC establishing the F-Factor scheme, “fire start” is defined as:

- (1) The fire starts that are to be 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 coming into contact with 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.
- (2) For the purposes of clause 4(1)(b), it is irrelevant whether the tree or part of the tree that fell upon or came into contact with the distribution system is or was, before the fire start, inside or outside a required clearance space.
- (3) In this clause – Code of Practice for Electric Line Clearance means the Code prescribed pursuant to Part 8 of the Electricity Safety Act 1998.

---

<sup>2</sup> On 13 September 2011





### **3. DNSP Overview**

#### **3.1. Jemena**

Jemena is an energy supplier which owns and maintains a network of electricity, gas and water assets. They are one of the smallest of the DNSPs within Victoria in terms of customer base (305,000). Their supply network is predominantly urban, focusing mainly on Melbourne city centre and its North-Western suburbs. They have around 6,000 km of powerlines on 91,000 poles, with approximately 25% of their lines running underground.

#### **3.2. United Energy**

United Energy is an electricity distributor whose supply is mostly based in Melbourne's South-Eastern suburbs and the Mornington Peninsula, which is an area of about 1,500 km<sup>2</sup>. They supply electricity to 627,000 customers, utilising 13,000 km of powerlines on 211,000 poles.

#### **3.3. PowerCor**

PowerCor is a sister electricity supply company to CitiPower. They supply predominantly rural areas, with around 83,000 km of powerlines over 485,000 poles. This network stretches across an area of 146,000 km<sup>2</sup>, providing service to 700,000 customers. It is the largest of the five DNSPs within Victoria in terms of area covered and customers.

#### **3.4. CitiPower**

CitiPower is linked to PowerCor, although their supply area and customer base is smaller. This is due to the fact that they supply almost exclusively around Melbourne's CBD. Their network is contained within 157 km<sup>2</sup>, serving 310,000 customers. This includes 6,500 km of powerlines on around 59,000 poles.

#### **3.5. SPAusnet**

SPAusnet is the second-largest DNSP in terms of area (80,000 km<sup>2</sup>). Their supply is mainly rural, with 48,000 km of powerlines on 384,000 poles, with 19% of their lines running underground. This network extends from the outer-eastern suburbs of Melbourne, north and east to the New South Wales border (encompassing Seymour, Benalla, Wangaratta and Wodonga), south and east to the coast. Its related companies also operate the electricity transmission network and one of three gas distribution networks in Victoria.



## 4. Submissions

### 4.1. Introduction

Submissions were received from all DNSPs using the template supplied by AER. The data provided were analysed to assess consistency and robustness of claims made. [REDACTED]

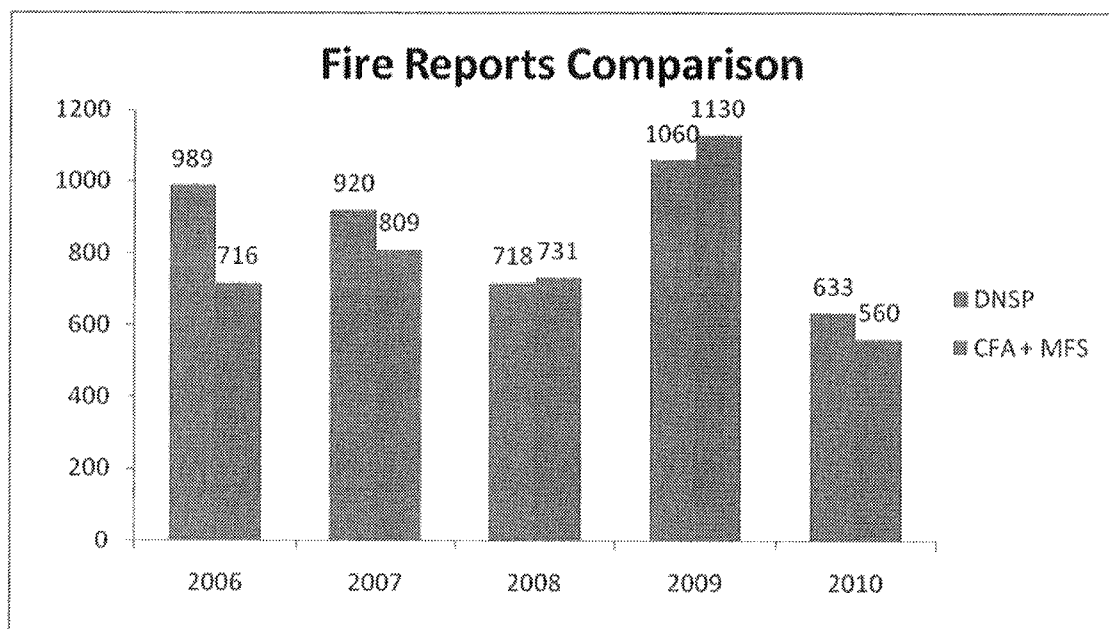
### 4.2. Observations

Several observations and assumptions can be formed from analysis of the data. These observations are summarised in the following sections:

#### 4.2.1 Comparison to External Sources

The total numbers of fires reported by the DNSPs was compared to those reported by the Country Fire Authority (CFA) and Metropolitan Fire Service (MFS).

■ Figure 1 - DNSPs report figures compared to CFA + MFS



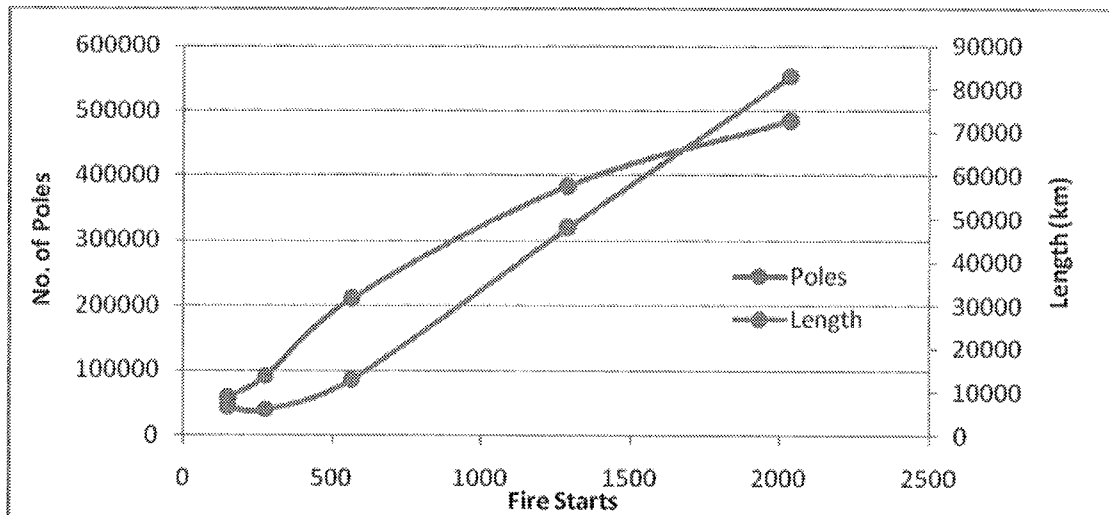
The combined DNSPs' figures are closely aligned to those of the CFA and MFS, with an average difference of less than 9%.



#### 4.2.2 Attribute Correlation

The attributes of each DNSP were compared to the number of fires started. The attributes used were total line length, and number of poles. The results are shown in the graph below.

Figure 2 Length of line and number of Poles compared to Fire starts



Other potential attributes were examined (such as DNSP network area) but were found to not be as directly related as the length of line and number of poles. This graph shows that the greater the quantity of assets being used, the greater the number of fires. No certain conclusion can be drawn linking fire starts specifically to either line length or number of poles due to the small number of DNSPs being analysed.

#### 4.2.3 Categorisation of Fire Starts

The categorisation of reported fire starts by each of the DNSPs, as specified by the AER,<sup>3</sup> was also examined. Table 1 (below) details the report fire start asset types:

<sup>3</sup> The AER specified reporting categories were based on the current reporting categories of ESV.



Table 1: Percentage of Fire starts allocated to each category by DNSPs

DNSP Category Analysis						
Fire Start by Category	Fire Start by Asset			Jemena		
Asset failures resulting in grass/vegetation fire	Pole and cross arm failure or Pole and cross arm fire	■	■	0%	■	■
	Oil-filled plant	■	■	0%	■	■
	HV Fuse	■	■	0%	■	■
	Other Assets	■	■	5%	■	■
	Any fire triggered by any asset failure caused by Lightning	■	■	0%	■	■
	Fire starts in grass/vegetation resulting from animal contact with network assets	■	■	1%	■	■
		■	■	0%	■	■
		■	■	2%	■	■
Asset failures resulting in asset fire (no grass/vegetation fire)	Pole and cross arm fire (including 'smouldering' or 'smoke')	■	■	85%	■	■
	Oil-filled plant fire	■	■	0%	■	■
	HV Fuse Failure (including 'hang-ups' and 'candling')	■	■	1%	■	■
	Other Assets	■	■	5%	■	■
	Any fire triggered by any asset failure caused by Lightning	■	■	0%	■	■
Any other Fire Start	Any additional fires, caused by any asset failure, not reported to the ESV and required to be reported by the OIC	■	■	0%	■	■

Comparison with external sources and attribute correlation showed good alignment of DNSP reported fire starts. It was expected that the categorisation of fire start causes would also be fairly uniform between the DNSPs. It can be seen from Table 1 that there is a large variation between DNSPs in how fire starts were allocated into each of the categories, suggesting that the interpretation of the categories may have been different for each DNSP, or that the base infrastructure had different characteristics. This suggests that further instruction and category specification is needed when the templates are distributed.

The interviews with each DNSP identified that there are differences in types and characteristics of assets in each DNSP and that this also affects the categorisation of fire starts.



The variation in asset types between DNSPs is the most likely cause of differences in categorisation reporting and this is accepted as a valid explanation by SKM. If there are different interpretations in fire start cause in each DNSP, this is expected to improve in future years with suggested changes in reporting criteria and also more familiarity with the F-Factor reporting requirements.

#### 4.2.4 Fault Descriptions

Individual fire starts, and their recorded details, were examined to assess the fire start recording techniques of each DNSP, based on the use of free text entries in fault reports submitted. Through a combination of word filtering and random selection, a number of observations were made.

■ Table 2: Word Filter of “fire” within fault descriptions

	<i><b>Total Fires</b></i>	<i><b>Use of the Word "fire"</b></i>	
<b>SPAusnet</b>	1290	■	■
<b>Powercor</b>	■	■	■
<b>United Energy</b>	566	■	■
<b>Jemena</b>	276	177	64%
<b>Citipower</b>	■	■	■

This initial filter provides a demonstration of the variation between DNSP reporting methods. The lack of information given by some DNSPs on the actual fire made verifying their claims difficult or impossible. Many descriptions provided only the repairs made, and some gave even less than this. While this information can be useful, the cause of the fire would be more valuable information to record.

■ Table 3: Average length of Fault Descriptions

	<i><b>Average No. Of Characters</b></i>
<b>SPAusnet</b>	■
<b>Powercor</b>	■
<b>United Energy</b>	■
<b>Jemena</b>	47
<b>Citipower</b>	■



The results in Table 3 further confirm the variation contained in the descriptions. This variation is understandable, as the DNSPs collected this data without the knowledge that they would have to fill in these tables for the AER. However the examination of these descriptions and the sparseness of some of the entries led to several other observations concerning identical descriptions for certain faults.

*(a) Standard Phrase Entries*

Some data entries were made using identical or standardised phrases. This may have been due to “drop-down” section boxes in reporting systems. Use of standardised phrasing made verification of these entries difficult. The main cause for concern were the entries provided under the “*Asset failures resulting in asset fire (no grass/vegetation fire)*” category started by “*HV Fuse Failure (including ‘hang-ups’ and ‘candling’)*”. This category contained many descriptions that made no mention of the fire starts, demonstrated by the word filter results in the table below.

■ Table 4: HV Fuse failure word filters

	<i>HV Failure Fires</i>	<i>Use of the words "fire" / "hang" / "candl*"</i>	<i>Difference from average use of "fire"</i>
<b>SPAusnet</b>	■	■	■
<b>Powercor</b>	■	■	■
<b>United Energy</b>	■	■	■
<b>Jemena</b>	3	100%	56%
<b>Citipower</b>	■	■	■

These results show that a lower proportion of ■ and ■ fire start descriptions mention the fire start, when compared to the rest of their descriptions. It is suggested that clarification be given as to how they differentiated between the ■ which started fires, and those which didn't.

Related to this is the inclusion by several DNSPs of fire starts by street lights. Some of these are described as burnt out, which may not necessarily mean there was a fire start associated with that event. As a result it is suggested that a separate category be given to streetlights.

*(b) Duplicate Entries*

■. This then prompted an examination of each set of data provided by the DNSPs. The table below outlines the results, based on the Record Numbers provided by the DNSPs.



■ Table 5: Duplicate Entries

	<i>Fire Starts</i>	<i>Unique Record Nos.</i>	<i>Difference</i>	<i>Duplicates</i>
<b>SPAusnet</b>	1290	1262	28	7
<b>Powercor</b>	■	■	■	■
<b>United Energy</b>	566	524	42	6
<b>Jemena</b>	276	252	24	1
<b>Citipower</b>	■	■	■	■

The figures in the “Duplicates” column refer to fire start entries with the same Record Number, that after specific examination appear to be similar in either time of entry or fault description. The reasons for these are unknown, but it could either be a manual input error, a filtering error, or an error caused by multiple recording systems. An assessment for each individual DNSP regarding duplicates is carried out below.

*SPAusnet:*

Of 28 entries without unique record numbers, 7 were found to be identical, and 21 have no record number assigned.

■

■  
■  
■  
■  
■  
■  
■

*United Energy:*

Thirty three of UE’s entries without Record Numbers simply had “N/A” in the relevant box. Three of them had no number. In the 6 duplicates, some had identical Record Numbers and fault descriptions, but were years apart, which had no obvious explanation.

*Jemena*

The majority (18) of Jemena’s entries lacking unique record numbers came from a series of entries on the 14th and 22nd December 2006 with the fault description “33 POLE FIRES ON THIS DAY. 10 WITH UNSPECIFIED DETAILS”. These are alluded to in the “Adjustments” sheet of their F-



Factor submission. Six other entries were found with the same ID, submitted at the same time, but with pole fires in different areas described in the fault description.

### 4.3. Summary

The key points from the SKM review of the submissions by each DNSP are:

- The overall reported figures compare well to those of the CFA and MFS;
- A reasonable correlation can be seen between line length, pole numbers and fire starts;
- There was a large variation in how fire starts were allocated under the reporting categories by the DNSPs. This is demonstrated by the proportion of fires allocated to each;
- The descriptions of the fire starts also varied significantly between DNSPs. Many of these lacked fire causes;
- [REDACTED];
- It is recommended that DNSPs be requested to review data for duplicates. The systems used to fill out this data also need to be examined to determine the reason behind these duplicates, as well as several other issues mentioned in section 4.2.4.





## 5. Interviews with DNSPs

### 5.1. Introduction

Interviews were conducted with each DNSP on 8-9 September 2011. Participants were provided with a set of questions to guide the discussion. These questions are attached in an Appendix to this report.

The aim of the meeting and the site inspection was to understand the processes used in each organisation to collect data, and to develop an understanding of the robustness of the processes in measurement of F-Factor fire start data. In addition, the questions were intended to determine how the data are used by each DNSP for asset management decision making.

All meetings followed the same basic agenda:

- Introduction and welcome;
- SKM Engagement and scope;
- Standard questions;
- Specific question on data provided;
- Inspection of systems used by DNSP;
- Wrap up and summary.

In some cases, follow-up information was requested to provide evidence of claims or to illustrate processes and systems used.

### 5.2. Observations

The following observations were derived from the interviews:

#### *Data Management and Reporting*

- 1) All DNSPs capture fire start data via the same information systems and processes used to capture and record network outage and work order data.
- 2) Outage reports are used as part of a works management process to despatch field crews for repair and restoration works. Systems are used within each organisation to analyse outage reports to determine where corrective actions and field resource despatch was required.
- 3) Outage reports from members of the public (including fire start reports if applicable) are managed via public calls to DNSP Call centres (in some cases DNSPs use shared call centres). UED and Jemena share an outsourced call centre.
- 4) In general, fire start reports account for a relatively small proportion of total calls re outages.



- 5) Customers may call relevant fire authorities, in addition to the DNSP, however this is not guaranteed. Call centre operators may also call relevant fire authorities.
- 6) Call centre operators use selectable DNSP defined “Trouble Codes” to provide information in relation to calls regarding asset issues. Other data related to the original fault may be added by field crew dispatchers, maintenance supervisors or from field crew reports on site.
- 7) The majority of fire reports are via public reports of outages and if fire is mentioned, the data is recorded by call centre operators using defined reporting screens.
- 8) Fire reports from employees (field Operations and Maintenance staff) are generally to an operational control centre, rather than the public call centre. However, reports were eventually stored in a common information system.
- 9) To provide the data requested by the AER, DNSPs searched existing historical databases for the relevant fault codes or words used in recording outage information. Often the word “fire” or other identifying words were extracted from “free text<sup>4</sup>” sections of the fault reports.

#### *Public Awareness*

- 10) There appears to be no reported issues with the public awareness of asset ownership. The relevant DNSP call centre contact number is included in retail billing information provided regularly to customers. Some DNSPs have other methods of public awareness, such as specific bushfire readiness campaigns, fridge magnets supplied to customers, etc.

#### *Types of Fire Starts reported*

- 11) Some types of fires, included in both ESV and F-Factor reporting, are weather related. Pole top fires occur under particular weather conditions, usually misty, light rain conditions. It was noted that these conditions are unlikely to be conducive to grass-fires from distribution assets.
- 12) Pole top fires are difficult to control and predict due to the relationship with specific weather conditions. In some cases, there may be 3-4 per year and then 30-40 occur in one night in some measurement periods. All DNSPs reported specific measures to eliminate pole fires by cross arm replacement programs or policies.
- 13) The types and the number of fire starts appear to be directly related to the type of asset and the network environment (urban or rural) for each particular DNSP. In some cases, known problems with an asset type contribute to fire starts (e.g. fire starts from Streetlights appear to relate to a particular type and age of streetlight).

---

<sup>4</sup> Free text sections allow freedom for an operator to record any text deemed appropriate or to record verbatim the words used by a caller. Other data fields may be mandated or selectable. The amount of free text or mandated information is part of the design of the call centre trouble call system.



- 14) DNSPs are also required to report fire starts to ESV and would therefore prefer to keep consistency between fire starts reported to ESV and to AER under the new F-Factor scheme.
- 15) It was agreed by all DNSPs that not all reports of burnt, scorched or melted assets were classified as “Fire Starts”. For possums and other animals, a fire start was recorded if the burnt animal actually started a fire.

#### *Asset Management*

- 16) Fire start information was considered very important by all DNSPs. Evidence of monthly or other corporate reporting to senior management was provided, including defined metrics for measurement of overall fire risk.
- 17) Capital works programs specifically related to reducing fire risk were identified in all organisations including:
  - Cross-arm replacement programs to reduce pole top fires
  - Vegetation management programs
  - Pole replacement programs
  - Aerial Bundled Conductor (ABC) installation
  - Bushfire mitigation plans define actions and programs to mitigate bushfire risk within each DNSP jurisdiction.

#### *Quality Control and Auditing*

- 18) All DNSP’s were able to identify a specific person responsible for the fire reporting process. This is considered to be important for quality control and consistency in reporting.
- 19) Jemena uses “reference cards” to provide guidance for call centre operators to assist in ensuring reporting accuracy at source. Other utilities provide other forms of guidance to call centre operators, [REDACTED]
- 20) No DNSP reported having a formal procedure defining the process for fire start or reliability reporting. However, the reporting of outages and the consequent works to rectify issues and faults can be considered to be DNSP core business and the processes are formalised into core business information systems ensuring consistency. Some utilities reported preparing flowcharts defining key processes.
- 21) None of the DNSPs interviewed reported that they carry out a formalised audit of fire start data, however informal audits or validation processes were commonly reported as part of preparing monthly reports. Jemena reported some field visit checks to validate field reports.



### *Unrecorded Fire Data*

22) In the data provided by DNSPs, a request was made to provide details of un-recorded fire data. This was discussed during DNSP interviews.

██ SKM has reviewed these events and considers that the majority of items listed by United Energy are not fire start under the definition of the OIC, as there is not reported evidence of fire.

Jemena reported 8 items that were associated with fire start, but the fire was contained in a small area. SKM considers that these should be included in developing an average number of fire starts under the F-Factor scheme, as these events did reportedly involve a fire event, albeit small. This view was formed in discussions with DNSPs during interviews.

Jemena and United Energy were invited to submit a modified claim on the number of fire starts, previously un-reported.

### **5.3. Summary**

All DNSPs appeared to have robust systems to capture reliability data that was linked with the organisation's core work management processes and systems.

However, much of the recording of fire start information was relatively ad-hoc and relied on actual words used in call centre reports and on works orders used by call centre operators, dispatchers, planners, supervisors and field workers. Minor changes are recommended to ensure that faults and incidents that involve fire, broadly meeting the OIC definitions, are recorded at the time of fault report, rather than by later analysis.

The unrecorded fire events submitted by United Energy ██████████ are not considered to be fires under the OIC definition.



## 6. Conclusions

### *General*

Fire start reporting is vitally important to overall DNSP risk management, even without the existence of statutory reporting or incentive schemes. This is due to the huge statutory, public perception and commercial risks associated with fire starts from distribution system assets.

The DNSP data submitted in response to the AER request does not allow verification of the events and asset failures that resulted in the fire start reports, due to passage of time. This applies not only to the current SKM review, but also to statutory and other reports prepared by DNSP staff.

### *Quality of Data*

The quality of fire start reports relies on the quality of data collected at the time the incident occurs. SKM is pleased to note that the fire start data used to report to the AER (and other external stakeholders) is sourced by DNSPs from their core business systems, typically their outage management and works management systems. These systems are used to record outages and manage the flow of work through to supply restoration. DNSPs use these systems for the majority of their core business reporting.

All DNSPs have similar objectives regarding optimal management of the network risk, reliability, statutory compliance and commercial objectives. Furthermore, each DNSP has developed reporting systems based on the broad categorisation of faults and events that impact the system. To achieve a degree of objectivity, different coding is used to categorise events (particularly fault report, cause and restorative actions). However, this is achieved with different information systems and works processes. There are inevitable differences in approach between utilities, even though external reporting requirements are broadly similar (eg. the interpretation and subjectivity inherent in data entry by staff involved with different aspects of the fault categorisation).

### *OIC Requirements*

The OIC requires reporting of incidents that were previously not considered to be potential fire starts. The definition of fire start in the legislation is particularly broad. For example, streetlight fires fit the definition of F-Factor fire start, but are unlikely to actually cause a fire in surrounding grass or trees. Streetlights are most often situated in urban areas with little or no near vegetation.

However, as streetlight faults fit the criteria defined for F-Factor fire start, and also the requirements for reporting to other stakeholders (eg. Energy Safe Victoria), these are included in the reports of DNSPs in this review.



### *DNSP Submissions*

SKM's review of the information submitted by DNSPs, and their fire start claims, concludes that their processes to collect data related to fire starts are robust and well controlled. However, the following issues were identified:

- 1) **Duplicate Records** - Some DNSPs ( [REDACTED] ) had apparently duplicate records, or records without key data fields. SKM recommends that further investigation of duplicate records is undertaken by DNSPs;
- 2) **Failure Types with no evidence of fire** - [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Notwithstanding these issues, which may be explainable by the utilities concerned, SKM considers that the data provided by DNSPs represents a balanced and robust view on the number of fire starts associated with each DNSP network to enable a target F-Factor level to be set.

Some improvements to data recording, and the introduction of regular auditing of fire start data used to measure f-factor performance, are desirable (refer to the following section).



## 7. Recommendations

The key SKM recommendations are:

- 1) To improve overall data reporting, DNSPs should be requested to improve the recording (or flagging) of fire start in data records.

This can be achieved in a number of ways from an information systems perspective, but in practical terms this would enable:

- a call centre operator to flag a customer call that mentions observation of fire and record in the reporting system; and
- a field worker or maintenance supervisor to have the ability to update a remedial action report, or a works order, with a clear categorisation of “Fire” by use of a radio button or other specific data field.

This will result in fire flags that may not be ultimately reported (using a “Reportable – Y/ N” field), but would provide a clearer distinction using data captured as close as possible to the report or data source.

- 2) Some DNSPs reported data verification processes associated with monthly statutory reporting, but none reported having formal data auditing processes.

DNSPs should be required to implement an appropriate internal F-Factor auditing process to ensure on-going robustness of reportable information related to the F-Factor scheme.

Information on the auditing process should be routinely provided to the AER.

- 3) In addition to the requirement for periodic internal auditing, the AER should require an annual independent audit of F-Factor data and reporting.

This annual audit should include a detailed examination of a sample of reported fire starts and include examination of supporting data in native systems, such as the organisation’s Outage Management or works Management system.

- 4) Based on the SKM review and consequent adjustments to the DNSP supplied data, the following table summarises the preliminary recommended target for DNSPs based on an adjusted 5 year average:



■ Table 6 SKM Recommended f-factor target 2012

				<i>Recommended Target (see Notes)</i>
<b>United Energy</b>	566	560	113.2	112
<b>SPAusnet</b>	1290	1283	258	257
<b>Jemena</b>	276	283	55.2	57
<b>Powercor</b>	■	■	■	393
<b>Citipower</b>	■	■	■	30

Notes:

1. Data adjustments subject to DNSP explanation
2. Duplicates taken from Table 5 and subtracted from total.
3. Jemena's 8 "Unrecorded Fire Data" incidents included.
4. Unrecorded Fire Data provided by United Energy not included.
5. Recommended Target values are rounded to nearest whole integer

G A Whicker

SKM Project Manager



## **F-Factor Incentive Scheme**

REVIEW OF SUBMISSIONS FROM DISTRIBUTION  
NETWORK SERVICE PROVIDERS - ADDENDUM

■ 22 September 2011



## F-Factor Incentive Scheme

### REVIEW OF SUBMISSIONS FROM DISTRIBUTION NETWORK SERVICE PROVIDERS - ADDENDUM

■ 22 September 2011

Sinclair Knight Merz  
ABN 37 001 024 095  
Level 5, 33 King William Street  
Adelaide SA 5000 Australia  
PO Box 8291  
Station Arcade SA 5000 Australia  
Tel: +61 8 8424 3800  
Fax: +61 8 8424 3810  
Web: [www.skmconsulting.com](http://www.skmconsulting.com)

**COPYRIGHT:** The concepts and information contained in this document are the property of Sinclair Knight Merz Pty Ltd. Use or copying of this document in whole or in part without the written permission of Sinclair Knight Merz constitutes an infringement of copyright.

**LIMITATION:** This report has been prepared on behalf of and for the exclusive use of Sinclair Knight Merz Pty Ltd's Client, and is subject to and issued in connection with the provisions of the agreement between Sinclair Knight Merz and its Client. Sinclair Knight Merz accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.



## **Contents**

<b>1. Introduction</b>	<b>1</b>
<b>2. Summary of each DNSP Response</b>	<b>3</b>
2.1. Jemena	3
2.2. United Energy	3
2.3. Citipower/PowerCor	4
2.4. SPAusnet	4
2.5. Summary Table	5
<b>Appendix 1: Supplementary Questions to DNSPs</b>	<b>6</b>





## Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Final	22/09/11	G Whicker	G Whicker	22/09/11	For issue to client

## Distribution of copies

Revision	Copy no	Quantity	Issued to
Final	1	Electronic	AER

<b>Project manager:</b>	Greg Whicker
<b>Name of organisation:</b>	Australian Energy Regulator
<b>Name of project:</b>	F-Factor Incentive Scheme
<b>Name of document:</b>	Review of Submissions from Distribution Network Service Providers - Addendum
<b>Document version:</b>	Final
<b>Project number:</b>	HD24261



## **1. Introduction**

This document is an Addendum to the Sinclair Knight Merz (SKM) report “F-Factor Incentive Scheme - Review of Submissions from Distribution Network Service Providers (DNSPs)”, dated 19 September 2011.

Following issue of SKM’s draft report on 15/09/11, DNSPs were requested to respond to a number of supplementary questions identified during the SKM review. These questions are included as Appendix 1. The responses from each DNSP are not attached to this Addendum, but can be provided upon request.

This Addendum reviews the DNSP responses to these supplementary questions and provides a recommended target F-Factor level for each DNSP.





## 2. Summary of each DNSP Response

Responses to SKM's supplementary questions were received from each DNSP.

Our summary analysis of each response is included below:

### 2.1. Jemena

Jemena previously reported a number of pole top fires that did not result in grassfire.

Jemena's response confirms that this has been the experience to date, with the pole-top fires generally occurring in unique, moist weather conditions which are unlikely to result in a fire. A number of apparently duplicate entries of fires were confirmed as valid, and evidence was presented to confirm the claims made.

SKM considers that the claimed fire starts from Jemena were valid and the initial target remains as previously recommended – ie. 57.

### 2.2. United Energy

United Energy's initial submission was characterised by a relatively large number of apparently duplicated records. This included 2 entries with identical record number and fault description, 3 entries with repeated record numbers and 2 entries with the same details except dates 3 years apart. United Energy also submitted a total of [REDACTED] events which might have been considered to be fire starts. SKM considers that the majority of these events would not be classified as a fire start under the OIC definition. However the OIC definition is broad and event records were not made with knowledge of the definition. United Energy suggests that a percentage of these events in different classifications should be considered, as follows:

- [REDACTED] - proposed that 5% of reports are accepted [REDACTED]
- [REDACTED] - no adjustment proposed by UE
- [REDACTED] - proposed 5% of reports included [REDACTED]
- [REDACTED] - no adjustment
- [REDACTED] - 10% of reports proposed [REDACTED]
- [REDACTED] - no adjustment proposed
- [REDACTED] - no adjustment proposed

The adjustments proposed by UE, including removal of previously identified duplicates, results in a total number of fire reports over the last 5 years of 662.





SKM considers that the claim for UE, with the proposed adjustments, is valid for the initial F-Factor target year and that the target for UE is 132.

In future years, AER should reasonably insist that UE data for fire events will:

- (i) Support the OIC fire start definition, and
- (ii) Be verifiable.

### 2.3. Citipower/PowerCor

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

### 2.4. SPAusnet

The supplementary questions for SPAusnet were of a minor nature, mainly clarifying missing record numbers. A small number (6) of duplicate records were identified and an amended number of fire starts submitted. SP Ausnet explanations and responses have been assessed and accepted as valid arguments.

SKM accepts SP Ausnet's explanation, analysis and small adjustment. The recommended F-Factor target for SP Ausnet remains 257 due to rounding.



## 2.5. Summary Table

The supplementary information and explanations provided by the DNSPs have been incorporated into revised recommended F-Factor targets as per the table below:

					Revised Recommended Target (see Notes)
<b>Jemena</b>	276	283	283	57	57
<b>United Energy</b>	566	560	662	112	132
<b>Powercor</b>					401
<b>Citipower</b>					30
<b>SPAusnet</b>	1290	1283	1284	257	257

Notes:

1. Data adjustments based on initial submissions and adjusted based on DNSP explanation (Second Amended Total)
2. Duplicates agreed by DNSPs have been deleted from totals where applicable.
3. Previously Unrecorded Fire Data adjustments proposed by United Energy have been included.
4. Recommended Target values are rounded to nearest whole integer

**G A Whicker**

**SKM Project Manager**



## Appendix 1: Supplementary Questions to DNSPs

### Questions for all DNSPs

- How were fire starts by “HV Fuse Failure (including ‘hang-ups’ and ‘candling’)” separated from simple fuse replacement when extracting data from information systems?
- Can you explain how Record Numbers are assigned to each individual fire start? Are they unique to an asset, a person or to an event?

### Jemena

- Can you clarify why none of the reported pole top fires from caused grass/vegetation fires?
  - When compared to other DNSP’s, Jemena had the highest proportion (85%) of pole top fires not resulting in vegetation fires, but had 0 that caused fires in vegetation. Please verify that this reporting is correct.
- Can you explain why 6 fires were reported under the same Record Number 656525 at 10:20 on 20/02/2008?
- Can you explain the duplicate entry under the record number 646186, with identical fault descriptions, but different locations and feeder IDs?

### SPA

- Why are there 20 entries in your data with no Record Numbers, and 1 with Record Number as “unknown”?
- Is there any explanation as to how 7 of the fire starts listed were identical copies of other respective entries? [REDACTED]

### United

- Why are there 33 entries in your data with Record Numbers listed as “N/A”, and 1 with Record Number as “unknown”?
- Can you explain why there are 2 entries with Record Number [REDACTED], with identical fault descriptions, but different dates and locations?
- Can you explain the 3 entries with Record number [REDACTED]?
- Can you explain the 2 entries with record number [REDACTED] and the same description, but are 3 years apart?
- Can you explain the 2 identical entries under record numbers [REDACTED]?
- In relation to “[REDACTED]” submitted, SKM view is that these are not classed as fire start under the OIC definition. The data appears to relate to failures that did not involve fire, merely the potential for fire (close calls). Examples include: [REDACTED]  
[REDACTED] Can you identify any faults in the “Unrecorded Fire Data” that fit the OIC classification of fire?



Powercor

- Can you explain the 69 duplicate record numbers submitted to the AER in your f-factor data? E.g. Record [REDACTED] has 2 entries on the same date and location.
- Why do 57 fault reports have no record number recorded? E.g. Fire Start [REDACTED] have no record numbers and identical descriptions
- In many of the cases of [REDACTED] the fault descriptions given were identical, containing no additional information. Is additional evidence available to corroborate the claim as a fire start under the OIC definition? How are these separated from simple fuse operations and replacement?