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Electrical Safety and Technical Regulation

Validation Report for the Powercor 2016-2017 Fire Start Report

Document information

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Important notice from Energy Safe Victoria regarding this document

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Introduction

Background

The Victorian Governor in Council made the Order in Council for the F-Factor Scheme Order 2016 under section 16C of the *National Electricity (Victoria) Act 2005*. This was gazetted on 22 December 2016.

The f-factor scheme is managed by the Australian Energy Regulator (AER). Section 7 of the Order in Council identifies that the AER may request Energy Safe Victoria (ESV) to validate the fire start reports submitted to the AER by the Distribution Network Service Providers. Each fire start report will have an individual validation report.

The Order in Council stipulates that each Distribution Network Service Provider (DNSP) will provide a fire start report to the AER by 30 September each year. The Order in Council also stipulates that, if requested by the AER, ESV will provide a validation report to the AER by 30 November each year.

The Order in Council also identifies that the AER may refer any submissions regarding the validation reports to ESV in order to provide a revised validation that responds to the submissions by 15 February in the following year.

Request from AER

The AER wrote to Paul Fearon, Director of Energy Safety, on 3 October 2017 to formally request that ESV validate the 2016-2017 fire reports provided by the DNSPs (AER ref. 62035). The AER also provided the following documents for the validation assessment:

- Powercor 2017 F-factor RIN Statutory declaration — PDF document
- Powercor F-factor Audit Opinion 2017 — PDF document
- Powercor F-Factor Scheme Report 2016-17 — Excel spreadsheet

These documents consider the Powercor distribution system separately from other systems managed by the service provider.

The AER advised ESV that, where necessary for the purposes of validation, ESV should seek additional information directly from the DNSPs. This is in line with clause 7(4) of the Order in Council. Where additional information was sought, ESV ensured that the AER was copied into any correspondence.

Validation process

While the scope of the fire start report and the validation process are detailed in the Order in Council (as outlined below), the approach to be undertaken in assessing the accuracy of information provided is not specified. This section describes the process that ESV applied to the validation assessment; the results are provided later in this report.

Scope

In reviewing the information provided in a DNSP's fire start report, clause 7(3) of the Order in Council stipulates that ESV's validation report:

(b) must include an assessment of the accuracy of the information provided in the fire start report pursuant to clauses 6(3)(d)-(f) and (h), specifically:

(c) must verify the estimate of the ignition risk unit (IRU) amount for the financial year provided under clause 6(3)(g).

These specific items are detailed in clause 6(3) of the Order in Council, which states that a DNSP's fire start report must, among other things:

(d) if the Distribution Network Service Provider is the service provider in relation to more than one distribution system, distinguish between distribution systems;

(e) list all fire starts for a financial year, stating in each case and where known;

(i) what kind of fire start it was;
(ii) the date, time and latitude and longitude for each fire;
(iii) the unique identification number of the pole and polyphase electric line nearest to the fire start;
(iv) the voltage of the electric line in which the ignition occurred;
(v) the estimated value of the fire start expressed in IRUs, calculated in accordance with this Order;

(f) state whether the fire was reported to a relevant entity;

(g) calculate the total IRU amount for the financial year on the basis of the information contained in the fire start report, in accordance with this Order;

(h) include such other information as the AER may from time to time specify;

Clause 6(3) of the Order in Council also requires that the DNSP's fire start report:

(i) include an independent audit of the fire start report undertaken by an external auditor;

(i) stating, in the auditor's opinion, whether the information contained in the fire start report is accurate and reliable; and
(ii) which is acceptable to the AER.

Methodology applied

For its validation assessment, ESV broke these items into the two categories:

- IRU-specific factors

  These comprise those factors within the fire start report that are directly relevant to the calculation of the IRUs for the incident. Specifically these are the date, time and latitude and longitude for the fire and the distribution business' estimate of the IRUs for the fire [items (e)(ii) and (e)(v) in the Order in Council].

- Non-IRU factors

  These comprise all other information reported in the fire start report [items (e)(i), (e)(iii) and (e)(iv)].

A more detailed analysis was undertaken of the IRU-specific factors than of the non-IRU factors.

ESV validated the DNSP fire start reports as follows:

- *Preliminary review*

  The purpose of the preliminary review was to determine that the information provided to ESV was complete and in a satisfactory form for ESV to undertake its validation analysis.

  ESV started by reviewing the documentation provided by the AER to ensure that all relevant information was provided and readable.

  The DNSP's fire start spreadsheet was then subject to a preliminary, high-level review to ascertain whether there were any obvious issues with the information contained therein. If the preliminary review identified any issues, ESV would contact the DNSP so that the DNSP could provide an updated spreadsheet.

- *Completeness assessment*

  The purpose of the completeness assessment was to determine whether:

  - all fires in the DNSP's fire start report are listed as fires in OSIRIS[1]
  - all network-related fires listed in OSIRIS are included in the DNSP's fire start report.

  Where there were differences identified, ESV contacted the DNSP to confirm the reasons for the difference.

  The DNSP then provided a rationale for the differences and, where there was a change to the information in the fire start spreadsheet, the DNSP provided an updated spreadsheet reflecting any changes and, in some instances, additional supporting information.

  We reviewed the rationale and information subsequently provided by the DNSP to confirm we were satisfied with the reasons for the inclusion or exclusion of specific incidents.

- *Comparative analysis — IRU-specific factors*

  The purpose of the comparative analysis of IRU-specific factors was to identify any *material* differences between the information reported by the DNSP in its fire start report and through OSIRIS. In determining materiality, ESV considered whether:

  - any differences in the location were sufficient to result in a lower location multiplier being applied to the fire start
  - any differences in the location were sufficient to result in an incorrect CFA region being used for determining the applicable Fire Danger Rating for the fire start
  - any differences in the date and time were sufficient to result in an incorrect Fire Danger Rating being applied to the fire start.

  Where potentially material differences were identified, ESV contacted the DNSP to confirm the reasons for the differences.

  The DNSP then provided a rationale for the differences and, where there was a change to the information in the fire start spreadsheet, the DNSP provided an updated spreadsheet reflecting any changes and, in some instances, additional supporting information.

  We reviewed the rationale and information subsequently provided by the DNSP to confirm we were satisfied with the rationale and information provided.

[1] OSIRIS is ESV's incident reporting portal for the major electricity companies to report details of any serious electrical incidents to ESV. These incidents include a range of events that include fires involving network assets.

- *Comparative analysis — non-IRU factors*

  The purpose of the comparative analysis of non-IRU factors was to identify any differences between the information reported by the DNSP in its fire start report and through OSIRIS.

  Where differences were identified, ESV has identified these in this report. No further consultation with the DNSP was undertaken.

Following the validation process, ESV then used the final data to calculate an IRU amount for each fire start. We then compared these against the IRU amounts provided by the DNSP, and a total IRU amount was calculated.

Caveats

The following caveats apply to the validation process and the contents and findings of this report:

- *Accuracy of the fire start data*

  The validation process involves the comparison of two data sets — the DNSP's fire start report and incident data reported by the DNSP via ESV's OSIRIS. Where there are discrepancies between the data reported in these two data sets, ESV has not sought to ascertain which data set provide the true and accurate record of each fire start for the purposes of this report; however, we will pursue this in subsequent discussions with the DNSP.

  As such, ESV can only attest that the data provided in the fire start report is appropriate for the purposes of calculating the total IRU amount. The information provided in the DNSP's fire start report should not be used for other purposes without further analysis of the data to verify it is fit for such purposes.

- *Validation against third-party sources*

  ESV has not sought to validate or verify the data in the DNSP's fire start report in its entirety against third-party sources such as the Country Fire Authority (CFA) and Melbourne Metropolitan Fire Brigade (MFB).

  This is not deemed to be a significant limitation on the validation process as any fires involving network assets should be reported by the CFA/MFB to the DNSP and these are, in turn, reportable to ESV.

  Individual records may have been subject to confirmation with the CFA and/or MFB on a case-by-case basis. If this has occurred, it is noted within the report.

- *Independent verification of fire starts*

  ESV does not have the resources available to routinely undertake independent assessments of the DNSP's electricity network in order to ascertain whether the DNSP identifies all incidents, including fires. As such, the fire starts may be under-reported; however, we are confident that the number of such incidents is small and that no significant fires could have gone unreported.

  Similarly ESV has not undertaken an independent audit of the DNSP's records to ensure their accuracy. In this regard, we have relied on this being undertaken as part of the independent audit commissioned by the DNSP, the details of which were submitted as part of the fire start report.

Accuracy of information provided

ESV undertook an assessment of the accuracy of the information provided in the Powercor fire start report in accordance with clause 7(3)(b) of the Order in Council. The following sections outline the findings of the assessment.

Further details regarding the specific incidents reported in the fire start report are available upon request.

Preliminary review

Upon receipt of Powercor's documentation, we undertook a preliminary review to ensure that all the required documents had been provided to ESV and that the fire reporting spreadsheet had no obvious issues with regard to incomplete or incorrect data.

No high-level issues were identified with the documentation provided by Powercor.

Completeness assessment

We compared the records provided in the Powercor fire start spreadsheet with those available from ESV's OSIRIS incident reporting portal. This comparison was undertaken to assess the completeness of the fire start report, with specific attention paid to identifying any records missing from either data set or classified differently between data sets.

The analysis identified 27 incidents where there were discrepancies between the Powercor fire start report and ESV's OSIRIS records. Details are provided in Table 1.

ESV wrote to Powercor on 31 October seeking clarification of the incidents identified in Table 1.

On 3 November, Powercor provided a response for each incident and an updated fire start report.

Table 1 Discrepancies between fire start report and OSIRIS

OSIRIS report no.	Included in fire start report	Listed as fire in OSIRIS	Comment
20161121PWA_06 20170103PWA_01 20161012PWA_05 20161027PWA_03	✓	×	Incidents listed in OSIRIS as fires on customer installations. Powercor determined that these fires involved its assets and were reportable. OSIRIS reports re-opened for Powercor to update. No impacts on f-factor validation process.
20161230PWA_05 20170418PWA_06	✓	×	Incidents respectively listed in OSIRIS as no evidence of fire and melting only. Powercor advise that these are f-factor reportable fires and that OSIRIS reports need to be re-opened for Powercor to update. No impact on f-factor validation process.
20160822PWA_04 20160830PWA_02 20161104PWA_01 20170206PWA_03 20170314PWA_05	×	✓	Incidents listed in OSIRIS as fires, but not included in fire start report. Further review by Powercor identified that: ▫ 20160822PWA_04 and 20160830PWA_02 are duplicates reports of the same incident. The fire was due to a fault on the customer installation and is therefore not reportable to the AER.

OSIRIS report no.	Included in fire start report	Listed as fire in OSIRIS	Comment
			▫ 20161104PWA_01 should have been included in the fire start report. ▫ 20170206PWA_03 was reported but the wrong incident number was listed resulting in a duplicate entry against 20170201PWA_02. ▫ 20170314PWA_05 was deemed by Powercor to not be reportable to the AER. See discussion provided above. The fire start report had to be amended for the entries above in orange.
20161229PWA_01 20170116PWA_01 20170201PWA_02	✓	✓	The Powercor fire start report listed multiple entries for incident reports 20161229PWA_01 (entries 70 and 71), 20170116PWA_01 (entries 89 and 109) and 20170201PWA_02 (entries 117 and 118). Further review by Powercor identified that: ▫ 20161229PWA_01 resulted in two separate fires, each of which is reportable to the AER. ▫ Entry 89 has the correct details for incident 20170116PWA_01 ▫ Entry 109 hadn't been reported to ESV and Powercor created a new incident report (20171102PWA_02) ▫ Entry 117 has the correct details for incident 20170201PWA_02. ▫ Entry 118 incorrectly lists 20170201PWA_02 as the incident number when it should have been 20170206PWA_03. This required the fire start records for the above incidents to be updated.
20160711PWA_02 20160715PWA_01 20160718PWA_01 20160803PWA_01 20160815PWA_04 20160818PWA_05 20160819PWA_06 20160831PWA_04 20160923PWA_01 20161108PWA_06 20161122PWA_06 20170213PWA_03 20170629PWA_09	×	✓	Incidents listed in OSIRIS as fires, but not included in fire start report. ESV review of incidents identified the faults were on customer installations and therefore not reportable to the AER. Even so, some OSIRIS reports record these as f-factor reportable. OSIRIS reports re-opened for Powercor to update. No impacts on f-factor validation process.

While Table 1 provides a summary for most of the discrepancies, there are two incidents that warrant further details as follows:

- Incident report 20170314PWA_05

  Incident report 20170314PWA_05 was not reported by Powercor as "it didn't meet AER reporting criteria: *fire triggered by any asset failure caused by lightning* (EIDB Ref # 12885)." Powercor claim that no asset failure was found that would have started the fire subsequent to the lightning strike; presumably the lightning strike directly started the fire. As such, Powercor believes that this incident is not reportable to the AER.

  Clause 5(1)(d) of the Order In Council states that a fire start includes any fire that is "started by lightning striking a distribution system or part of a distribution system". ESV's interpretation was that the Order In Council does not necessitate that an intermediate asset failure be the cause of the fire, just that lightning struck a network asset and a fire resulted. On 3 November, ESV sought advice from the AER on its interpretation on the Order In Council and its application in this instance.

  The AER advised that further detailed guidance is provided in the document *Definition of a fire start under the f-factor scheme: Explanatory note for the AER from the Victorian electricity distributors* that has previously been accepted by the AER. The latter notes that an incident will be classified as a fire start "if there is evidence of a fire in vegetation, or elsewhere, the cause of which can be directly ascribed to … lightning".

  Where there is a conflict between the Order In Council and the explanatory note, the Order In Council should prevail. In this instance, neither the Order In Council nor the explanatory note require the fire result from an intermediate, lightning-induced asset failure.

  ESV added details for incident report 20170314PWA_05 to Powercor's fire start report for the purposes of calculating its total IRU amount.

- Incident reports 20160822PWA_04 and 20160830PWA_02

  The OSIRIS reports didn't include a final conclusion as to the cause of the fire, and Powercor assumed these were due to a fault on the customer installation. ESV contacted the CFA for further details on their fire investigation and this confirmed that the fire arose on the customer installation.

Comparative analysis — IRU-specific factors

We compared the location (latitude and longitude) and timing (date and time) of each record in the fire start report with the record of the same incident in OSIRIS.

As we recognised that errors may be introduced into the location data due to rounding errors and other system-induced errors, we rounded all latitudes and longitudes to five decimal places to reduce the impact of such errors on the analysis.

The subsequent comparison of the records found extensive discrepancies in the location data — 83% of incident locations. Only 6% of incident times differed between the data sets. Further statistics on these discrepancies are provided in Table 2.

ESV will be following up with Powercor regarding these discrepancies as a separate matter after completion of the f-factor reporting process.

While there was a high level of difference between the data sets, ESV focused its analysis on those records where the differences could materially affect the IRU calculated for the fire start.

Table 2 Discrepancies in location and timing data

Statistic	Location data	Timing data
Number of records	196	196
Number of discrepancies	163 (83%)	10 (8%)
Minimum discrepancy	8.0 m	1.0 min
Maximum discrepancy	111,042 m	8,640 min (144 hrs)
Average discrepancy	988.8 m	1,162.7 min
Median discrepancy	108.8 m	231.5 min

ESV applied the following tests to determine if the differences between the data sets could be material:

- Test 1 : Is the difference in coordinates sufficient that a change in location may result in a higher location multiplier being applied?

  This was assessed by calculating the distance between each location in the fire start report and the nearest boundary to a region where a larger location multiplier[2] would apply (the buffer distance). If the difference in coordinates multiplied by 1.1 was greater than the buffer distance, the record was flagged for further discussion with the DNSP. [3]

  Thus, the materiality in Test 1 is not solely a function of the size of the difference in coordinates, but is more directly influenced by where the incident occurs (together with the size of the difference). Those events closer to boundaries are more likely to be flagged for further assessment; those events with large differences, but far from a boundary, are less likely to be flagged.[4]

- Test 2 : Does the Fire Danger Rating applicable at the location and time for a record differ when based on the information specified in the fire start report and in OSIRIS?

  ESV determined the applicable CFA region for each record by using the EM-COP website to check the CFA region at the OSIRIS coordinates.[5] We then ascertained the Fire Danger Rating based on that CFA region and the date and time data from OSIRIS. These were then compared against the Fire Danger Ratings specified in the DNSP's fire start spreadsheet and differences identified for further investigation.

  Thus, the materiality in Test 2 could either be due to a difference in the location or time data.

  ESV identified that the cause of some differences may be due to the DNSPs assuming that a Fire Danger Rating does not apply at the location because the CFA has not yet declared the fire danger period for the municipality in which the fire occurred. Given the Fire Danger Rating is forecast by the Bureau of Meteorology for large regions covering multiple municipalities, it is possible that a Fire Danger Rating has been forecast for the region before the fire danger period is declared for the municipality. ESV has reviewed the Order in Council and concluded that it is irrelevant to the calculation of the IRU amount whether or not the CFA has declared the fire danger period for municipality. It only matters that a Fire Danger Rating has been forecast for the region.

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2 These regions are specified in clause 11(b) of the Order in Council.

3 Given that distance between points on the globe is dependent on the latitude and longitude of the points, we calculate the approximate difference in meters using latitude and longitude conversion factors based on a central location. We then included a further 10 per cent margin to allow for approximations in the calculation.

ESV believes that the use of an approximation is acceptable for the general purpose of identifying records for further analysis.

4 As noted earlier, ESV will follow up with Powercor as a separate process.

5 Emergency Management Common Operating Picture (https://cop.em.vic.gov.au).

Using these two tests, we identified those records where the differences in information have the potential to materially affect the IRU for the fire start (Table 3). ESV wrote to Powercor on 23 November seeking clarification of these items.

Table 3 Discrepancies potentially material to calculation of the IRU amount

Incident number	DNSP fire start report			OSIRIS data		
	latitude	longitude	date/time	latitude	longitude	date/time
20160914PWA_02	-36.14418	144.73357	10/09/2016 19:06	-36.14408	144.73354	10/09/2016 19:06
20161012PWA_05	-38.0765	144.36923	6/10/2016 20:05	-38.07084	144.38968	6/10/2016 20:05
20161021PWA_04	-38.3464	143.78383	18/10/2016 19:22	-38.34665	143.78359	18/10/2016 19:22
20161104PWA_01	-36.26715	145.4045	2/11/2016 14:18	-36.26604	145.40399	2/11/2016 14:18
20161104PWA_02	-36.31493	145.42074	2/11/2016 14:18	-36.31442	145.42099	2/11/2016 14:18
20161122PWA_05	-34.18382	142.12966	18/11/2016 9:56	-34.17933	142.14128	18/11/2016 9:56
20161128PWA_03	-36.73849	142.2015	28/11/2016 8:10	-36.74071	142.20236	28/11/2016 8:10
20161130PWA_02	-36.86595	143.80422	11/11/2016 23:58	-35.86537	143.80373	11/11/2016 23:58
20161206PWA_04	-34.29893	142.2209	4/12/2016 9:33	-34.29917	142.22122	4/12/2016 9:33
20161223PWA_02	-37.54736	144.23272	18/12/2016 13:30	-37.51965	144.21849	18/12/2016 13:30
20170103PWA_01	-38.21106	143.03974	30/12/2016 17:43	-38.21267	143.04057	30/12/2016 17:43
20170116PWA_02	-36.31106	143.974	13/01/2017 14:57	-36.29998	143.97437	13/01/2017 14:57
20170130PWA_02	-35.48419	143.66103	27/01/2017 22:39	-35.46941	143.65576	27/01/2017 22:39
20170201PWA_05	-38.39846	143.85294	22/01/2017 1:41	-38.39324	143.84813	22/01/2017 1:41
20170210PWA_01	-36.50789	145.31061	27/01/2017 6:27	-36.50726	145.31085	27/01/2017 6:27
20170221PWA_01	-37.82732	144.77876	17/02/2017 15:24	-37.80444	144.75195	17/02/2017 15:24
20170328PWA_06	-38.42865	143.57887	27/03/2017 10:48	-38.4295	143.57784	27/03/2017 10:48
20170412PWA_05	-38.40231	144.18583	9/04/2017 22:21	-38.40524	144.18529	9/04/2017 22:21
20170419PWA_03	-37.83207	144.79946	18/04/2017 16:12	-37.83231	144.7992	18/04/2017 16:12
20170504PWA_01	-38.25497	143.61215	3/05/2017 7:11	-38.25328	143.61241	3/05/2017 7:11

On 27 November, Powercor wrote to ESV providing an individualised assessment of all the incidents identified in Table 3 — sixteen with locational differences and four with timing differences. An updated fire start report was not included.

Powercor contends that the locations of all incidents in the fire start report are correct, with the exceptions of 20161130PWA_02 (the incident with the largest discrepancy) and 20170221PWA_02 (one of two fires separately initiated by a single cause; see below). ESV included the incident coordinates in its analysis of the Powercor fire start report; the amended coordinates did not result in a change to the associated location multipliers.

ESV then reviewed the details of each fire start against other information provided by Powercor, including asset numbers and incidents descriptions in both the fire start report and OSIRIS. The review generally confirmed Powercor's assessment, although specific comment should be made on the following:

- Incident 20160914PWA_02

  The locations reported in the fire start report and in OSIRIS would place the fire in an LBRA zone, with the location within 2-3 metres of the HBRA boundary. ESV compared the asset details and confirmed that the fire start report and OSIRIS report identical asset details. ESV then checked the location on Google Maps and Google Street View. This confirmed the pole location lies just outside the HBRA zone and that, therefore, Powercor had applied the correct location multiplier.

- Incident 20170116PWA_02

  The location of the incident placed it in an HBRA zone on the western side of the Loddon Valley Highway in Bears Lagoon. The main powerline in the area runs along the eastern side of the highway and within an electric line construction area. While the incident descriptions in the fire start report and OSIRIS did not mention the fault off the main powerline, both sources did identify the asset involved as being a service conductor. ESV reviewed the location in Google Street View and identified a multi-cable service line running into a property at the specified location that could have resulted in the conductor clashing described in the incident description. This confirmed the fault location lies just outside the electric line construction area and that, therefore, Powercor had applied the correct location multiplier.

- Incident 20170201PWA_05

  The location of the incident is in the LEGL./16-354 zone based on the fire start report coordinates; however, it lies within an electric line construction area based on the OSIRIS coordinates. ESV compared the asset details and confirmed that the fire start report and OSIRIS report identical asset details. ESV then checked the location on Google Maps and Google Street View. This identified that the OSIRIS coordinates were consistent with a lookup of the addresses; however, the location is off the main road and there are no network assets at the OSIRIS location. The fire start report coordinates were on the road where Powercor had reported the incident and network assets were present at this location. ESV therefore accepted Powercor's conclusion that the fire start report coordinates were correct. This, in turn, confirmed that Powercor had applied the correct location multiplier.

- Incidents 20170221PWA_01 and 20170221PWA_02

  Both these fires resulted from a single initiating cause, being a truck contacting wires near the corner of Australis Drive and Robinson Road in Derrimut. In its assessment, Powercor noted that:

  - 20170221PWA_01 was the incident number for the initiating event and fire and 20170221PWA_02 was the secondary fire
  - the coordinates in OSIRIS for 20170221PWA_01 are those of the secondary fire rather than the initiating event
  - the coordinates in the fire start report for 20170221PWA_02 are those of the initiating event rather than the secondary fire (the correct location is -37.80388571S 144.75192438E)
  - the asset number for the 20170221PWA_02 is incorrect and should be 30332947.

ESV incorporated the Powercor amendments into its records and reviewed the two incidents. Based on the coordinates and incident descriptions provided, ESV concluded that

- 20170221PWA_01 was the secondary fire and 20170221PWA_02 was the initiating event and fire as 20170221PWA_02 was closest to the intersection of Australis Drive and Robinson Road
- the LBRA/HBRA boundary runs down the middle of Robinsons Road with the HBRA to the west of Robinsons Road
- the powerline runs along the eastern side of Robinsons Road in the LBRA (as confirmed from Google Maps and Street View)
- the location of 20170221PWA_02 lies within the LBRA
- the location of 20170221PWA_01 lies well within the LBRA.

ESV concluded that, despite some confusion on the details of the events, Powercor had applied the correct location multipliers to these two incidents.

Powercor identified the source of differences in timing and Fire Danger Ratings data relate to:

- an error in the fire start report for incident 20170328PWA_06 (see Table 4)
- differences between the CFA daily emails received during the fire season and the Bureau of Meteorology data now available on the EM-COP website.[6]

Powercor provided copies of the relevant CFA emails for review by ESV. These relate to incidents 20161104PWA_01, 20161104PWA_02 and 20170504PWA_01.

We reviewed the forecasts in the emails and compared these with the data available from the EM-COP website and records separately purchased from the Bureau of Meteorology. We found that:

- the EM-COP website is consistent with the raw data available for purchase from the Bureau of Meteorology
- the CFA emails were not always or wholly consistent with the Bureau of Meteorology data
- only one of the CFA emails notes that the Fire Danger Ratings forecasts were from the Bureau of Meteorology, whereas the other two emails did not attribute the source of the forecast
- the email, for the date where the source was attributed, only included one of the two forecasts for the day, and this could have resulted in further confusion had the 00:00 forecast not aligned with the 05:48 forecast.

We would recommend that Powercor not rely on the CFA emails for f-factor reporting purposes in future years.

Clause 4(1) of the Order In Council specifies the Bureau of Meteorology as the source of the Fire Danger Ratings data for the purposes of f-factor reporting. While not available at the time via the EM-COP website, Powercor should have purchased this data directly from the Bureau of Meteorology for its regulatory reporting rather than relying on the emails issued by the CFA throughout the year.

Based on the Bureau of Meteorology data, the Fire Danger Ratings and danger multipliers for four fires need to be amended as detailed in Table 4. These changes were used to calculate an amended IRU amount (see page 18).

[6] On 21 September 2017, the Powerline Bushfire Safety Program advised the DNSPs that f-factor reporting functions had been established on the EM-COP website. Powercor notes that the late release of this functionality did not allow for its use in the current reporting period.

Table 4 Fire Danger Rating and multipliers for incidents in Table 4

cells in orange show where differences were found

Incident number	DNSP fire start report			ESV analysis		
	Fire Danger Rating	danger multiplier	location multiplier	Fire Danger Rating	danger multiplier	location multiplier
Amended due to error						
20170328PWA_06	Low-moderate	0.2	4.6	High	0.5	4.6
Amended due to incorrect source of ratings data						
20161104PWA_01	No forecast	0.1	0.2	Low-moderate	0.2	0.2
20161104PWA_02	No forecast	0.1	0.2	Low-moderate	0.2	0.2
20170504PWA_01	No forecast	0.1	4.6	Low-moderate	0.2	4.6

Comparative analysis — non-IRU factors

ESV undertook a comparison of the data in the Powercor fire start report and OSIRIS related to:

- the kind of fire start
- the pole and polyphase electric line identifications numbers
- the voltage of the electric line.

Details from OSIRIS were used to determine whether the ESV fire start category and kind of fire start had been correctly identified. This involved a subjective assessment of the information.

A direct comparison was made of the details of the pole and line identification numbers and line voltage in the fire start report and OSIRIS. This did not require any subjective assessment.

The assessment of ESV fire start category identified five fire starts where ESV would have classified the fire differently to Powercor. These incidents were:

- Incidents 20160901PWA_04, 20161012PWA_05 and 20170130PWA_04

  Powercor classified these incidents as ‘‘Any additional fires, caused by any asset failure, not reported to the ESV and required to be reported by the f-factor Order’’. The incidents were, however, reported to ESV so they doesn’t fit this category.

  These incidents are difficult to classify as they resulted from vehicles or third-party equipment contacting network assets, but they didn’t cause a grass or vegetation fire so doesn’t fit the ‘‘Grass/vegetation fires from assets (non-asset failures) : Fire starts in grass/vegetation resulting from other causes (vehicle strikes, vandalism etc)’’ category.

  Given the fires only involved network assets, ESV’s review classified these as ‘‘Asset failures resulting in asset fire (no grass/vegetation fire) : Other Assets’’.

- Incident 20161206PWA_03

  Powercor classified this incident as an asset fire due to ‘‘Other assets’’. ESV’s reviewed the incident and identified that a ground fire had occurred and that the cause was bird strike. ESV would therefore classify this incident as ‘‘Grass/vegetation fires from assets (non-asset failures) : Fire starts in grass/vegetation resulting from animal contact with network assets’’.

We then used the ESV fire start category data to determine the broader fire start type as defined in Clause 5 of the Order In Council. Any discrepancies between the categories assigned by Powercor and ESV were then individually checked. We found only two incidents that ESV would have categorised differently (incidents 20170116PWA_01 and 20170125PWA_02). In both cases, Powercor categorised these as ‘‘Started by any person, bird, reptile or other animal coming into contact with a distribution system’’ and ESV classified them as ‘‘Started by any other thing forming part of or coming into contact with a distribution system’’.

ESV found discrepancies in the pole identification numbers for seven of the 196 fire starts. Of these, two records only included one of the two assets identified in OSIRIS (incidents 20161229PWA_01 and 20170127PWA_02) and five had different pole identification numbers (incidents 20160815PWA_03, 20160822PWA_02, 20161212PWA_02, 20170221PWA_02 and 20170320PWA_04).

Discrepancies were found in the polyphase electric line identification for nine of the 196 fire starts. Of these, one record appeared to have a typographic error in one of the data sets (incident 20170627PWA_04), two had additional line information in OSIRIS (incidents 20161206PWA_03 and 20161229PWA_01) and six records had different line identification numbers (incidents 20160715PWA_02, 20161104PWA_02, 20161116PWA_03, 20161206PWA_04, 20170314PWA_04 and 20170403PWA_01).

There was a difference in the line voltage recorded for seven fire starts (incident 20160915PWA_01, 20161012PWA_05, 20161017PWA_03, 20161206PWA_03, 20161212PWA_03, 20161229PWA_09 and 20170406PWA_03). In five instances, the fire start reports listed the voltages as 22kV AC and OSIRIS lists the voltage as low voltage AC (<1kV); the other two instances listed the voltage as 66kV AC in the fire start report and 22kV AC in OSIRIS.

These discrepancies or differences in categorisation had no material impact on the total IRU calculation.

No consultation was held with Powercor regarding these discrepancies or differences in categorisation.

Verification of IRU amount

Following the validation of individual records, ESV compiled any changes to the fire start records and assigned the corresponding location and danger multipliers. In assigning multipliers, ESV corrected the danger multiplier formula in the AER template spreadsheet to ignore whether the CFA had declared the fire danger period for the municipality. The individual and total IRU amounts were then calculated.

We then compared our location and danger multipliers with those of Powercor to determine whether Powercor had correctly assigned the multipliers for each fire start. There were no differences in the multipliers or IRU amount except for the four incidents identified in Table 4 with material discrepancies in Fire Danger Ratings. These differences resulted in amendments to the IRU amounts for these four fires. Table 5 shows the changes to the multipliers and IRU amounts.

ESV can therefore confirm that the total IRU amount provided in the Powercor 2016-2017 fire start report[7] needs to be amended from 156.64 to 158.52.

Table 5 Amendments to multipliers and IRU amounts

cells in orange show where differences were found

Fire start number	Incident number	DNSP fire start report			ESV analysis		
		danger multiplier	location multiplier	IRU amount	danger multiplier	location multiplier	IRU amount
196	20161104PWA_01	0.1	0.2	0.02	0.2	0.2	0.04
33	20161104PWA_02	0.1	0.2	0.02	0.2	0.2	0.04
154	20170328PWA_06	0.2	4.6	0.92	0.5	4.6	2.3
184	20170504PWA_01	0.1	4.6	0.46	0.2	4.6	0.92

[7] As per 2017 PAL F-Factor RIN (Ver 1.2 ESV Checks).xlsm

Conclusion

As noted earlier, the Order In Council stipulates that this validation report:

(b) must include an assessment of the accuracy of the information provided in the fire start report pursuant to clauses 6(3)(d)-(f) and (h), specifically:

(c) must verify the estimate of the ignition risk unit (IRU) amount for the financial year provided under clause 6(3)(g).

Table 3 identifies where these items have been assessed within this report and summarises the key findings of the validation assessment.

Table 3 Summary of findings

Statistic	Relevant report section	Key findings
Clause 6(3)(d)	Request from AER	The fire start report addressed the Powercor distribution system separately from other systems managed by the service provider.
Clause 6(3)(e)(i)	Comparative analysis — non-IRU factors	There were four discrepancies between the assessment of the ESV fire start category made by Powercor and that made by ESV. There were also two discrepancies in the fire start types.
Clause 6(3)(e)(ii)	Comparative analysis — IRU-specific factors	While there were a significant number of differences between the fire start report and OSIRIS data sets, there were only four discrepancies material to calculation of the total IRU amount.
Clause 6(3)(e)(iii)	Comparative analysis — non-IRU factors	There were seven discrepancies between the fire start report and OSIRIS in relation to pole identification number. There were nine discrepancies between the fire start report and OSIRIS in relation to polyphase electric line identification number. These discrepancies were not material to the calculation of the total IRU amount.
Clause 6(3)(e)(iv)	Comparative analysis — non-IRU factors	There was seven discrepancies between the fire start report and OSIRIS in relation to voltage of the line involved in the fire. These discrepancies were not material to the calculation of the total IRU amount.
Clause 6(3)(e)(v)	Verification of IRU amount	The total IRU amount provided in the Powercor 2016-2017 fire start report needs to be amended from 156.64 to 158.52.
Clause 6(3)(f)	Completeness assessment	Powercor had reported all fires to ESV as the relevant entity. There was one fire reported to ESV that was not included in the Powercor fire start report. After discussion with the AER, ESV added this incident to the fire start report for the purposes of calculating the total IRU amount.