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ESV Validation Report

Powercor 2018-2019 Fire Start Report

Final Report

VICTORIA State Government

Executive summary

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.

Powercor provided its fire start report to the Australian Energy Regulator (AER) by 30 September 2019. This report covered the period 1 July 2018 to 30 June 2019.

The AER forwarded the fire start report to Energy Safe Victoria (ESV) on 1 October 2019 for validation by 30 November 2019. ESV undertook the validation process in a staged manner as follows:

- A **preliminary review** to ensure the information provided was complete and in a satisfactory form
- A **completeness assessment** to determine whether all fires previously reported to ESV had been included in the fire start report and to ensure all incidents in the fire start report had been previously reported as fires to ESV
- A **comparative analysis of IRU-specific factors** to identify any material differences between the information reported by Powercor in its fire start report and previously to ESV in relation to those aspects of the fire start report pertinent to the calculation of the total Ignition Risk Units (IRU) amount
- A **comparative analysis of non-IRU factors** to identify any differences between the information reported by Powercor in its fire start report and previously to ESV in relation to those aspects of the fire start report not pertinent to the IRU calculation.

Except for the analysis of non-IRU factors, ESV consulted with Powercor regarding any discrepancies identified to clarify the reasons for the discrepancies and to provide an opportunity to amend the fire start report.

Further detail on the methodology used for the validation analysis is provided herein.

On completion of the validation analysis, ESV issued the draft "ESV Validation Report: Powercor 2018-2019 Fire Start Report" to the AER on 29 November 2019. The AER provided a copy of the report to Powercor on 2 December 2019 and invited Powercor to respond with any comments within 15 business days.

Powercor wrote to the AER on 16 December 2019 confirming its general agreement with the findings of the draft validation report. Powercor also noted that it had undertaken a further review of the incidents identified by ESV. As a result, one of the incidents was removed from the fire start report because the incident had originated on the customer premises and, hence, was not reportable under the F-Factor Scheme. A revised fire start report was issued and this was subsequently reviewed by ESV in compiling the final validation report.

Following the validation process, ESV can confirm that the total IRU amount of 218.32 provided in the final Powercor 2018-2019 fire start report[1] is correct.

[1] *Powercor F-Factor RIN 2018-19 (Ver 1.4).xlsm*

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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 the AER

On 1 October 2019, the AER provided ESV with the Powercor 2018-2019 fire start report for validation. This comprised the following documents:

- F-Factor Powercor Audit Opinion 2019 (Signed) — PDF document
- Powercor F-Factor RIN 2018-19 (Ver 1.2) — Excel spreadsheet
- Powercor 2018-19 F-factor stat dec — PDF document

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

On 10 October 2019, ESV confirmed receipt of the above documents and advised the AER that, where ESV deemed it necessary for the purposes of validation, ESV would 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[2]
  – 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 change to the 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.

[2] 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 identified these in this validation report. The DNSP was able to comment on these differences in its response to the draft validation report.

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 differences 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 beyond a desktop assessment.

  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 the data sets.

The analysis identified three incidents listed as fires in OSIRIS that did not appear in the Powercor fire start report. Based on the descriptions of the incidents, ESV concluded that these had been incorrectly listed as network incidents in OSIRIS when they actually occurred on customer installations.

ESV wrote to Powercor on 17 October 2019 seeking clarification of these three incidents. Powercor provided a response on 18 October 2018 confirming that the three incidents were installations fires. Powercor subsequently updated the OSIRIS records for the three incidents.

No changes to the Powercor fire start report were required.

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.

We then checked the location area (used to determine the location multiplier) and the CFA fire district (used to determine the danger multiplier) using and DNSP and OSIRIS location data to ascertain whether these differed from the fire start report. As such, we only consider those differences in location that were material to the calculation of the IRU amount.

In undertaking its analysis, ESV focused on those records where the differences could materially affect the IRU calculated for the fire start.

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 change to the location multiplier?

  The location area for each fire start was determined based on the coordinates in the fire start report and OSIRIS. This was done by identifying the location areas in which the coordinates were sited. If these differed from the location areas listed in the fire start report, the incident was investigated in more detail to identify the cause of the difference. Where necessary, the incident was referred back to the DNSP for further clarification.

- **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?

  The Fire Danger Rating is dependent on the location of the fire (which CFA region the fire occurred in) and the time of the fire (what was the applicable Bureau of Meteorology Fire Danger Rating at the time of the fire).

  The CFA region for each fire start was determined based on the coordinates in the fire start report and OSIRIS. This was used to look up the Fire Danger Rating for that region in the spreadsheet of ratings available from the EM-COP website at the listed date and time of the fire.

  The Fire Danger Rating was determined based on the coordinates and times in the fire start report and OSIRIS. If these differed from the ratings listed in the fire start report, the incident was investigated in more detail to identify the cause of the difference. Where necessary, the incident was referred back to the DNSP for further clarification.

Using these two tests, we identified two incidents where the differences in information have the potential to materially affect the IRU for the incident. Both were associated with the location data (coordinates and location area) where Powercor had designated the location multiplier at a higher level than ESV.

ESV wrote to Powercor on 21 November seeking clarification of these incidents. Powercor provided a response and amended fire start report to ESV on the same day. Table 1 provides details of the items raised and associated Powercor and ESV commentary.

Powercor should be commended for confirming the location data despite this adversely affected the IRUs in all five cases.

Table 1: Material differences between OSIRIS and the fire start report

OSIRIS report	Amend OSIRIS	Amend fire start report	ESV and Powercor commentary
20190102PWA_03	No	Yes	Powercor originally classified this incident as occurring in "within area delineated on plan LEGL./16-354", with a location multiplier of 4.6. ESV identified that the incident occurred in LBRA, with a location multiplier of 0.2.
20190201PWA_01	No	Yes	Powercor originally classified this incident as occurring in "HBRA only", with a location multiplier of 1.0. ESV identified that the incident occurred in LBRA, with a location multiplier of 0.2.

Comparative analysis — non-IRU factors

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

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

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 comparison identified eight incidents with differences between the fire start report and OSIRIS. Of these, seven related to typographic errors in either data set and one was due to a pole identification number not being listed in OSIRIS. Table 2 provides a breakdown of these findings.

In responding to the draft incident report, Powercor confirmed that the pole and line id numbers in its fire start report were correct, and that it would update the OSIRIS records with the correct data.

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

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

- Incident 20180910PWA_02

  Powercor classified this incident as “started in or originated from a distribution system”, but ESV’s review identified that this incident appears to have originated in the customer installation and, as such, may not be f-factor reportable.

  In the OSIRIS report for this incident, Powercor had noted there was a “burnt out meter box and damage to timber supports in shed as a result of fire”, and that the cause of the incident was due to “insulation failure behind panel/board, possibly due to vermin damage”.

  In responding to the draft incident report, Powercor reviewed this incident and confirmed that it had occurred on the customer installation. This incident was subsequently removed from the final Powercor fire start report.

- Incident 20190104PWA_13, 20190118PWA_06 and 20190329PWA_02

  Powercor classified these incident as “started in or originated from a distribution system”, but ESV’s review identified that this incident was “started by lightning striking a distribution system or a part of a distribution system”. The OSIRIS reports for all three incidents attributed the cause of the incidents to lightning.

  In responding to the draft incident report, Powercor reviewed these incidents and updated its fire start report accordingly.

- Incident 20190617PWA_01

  Powercor classified this incident as “started in or originated from a distribution system”, but ESV’s review identified that this incident was “started by any person, bird, reptile or other animal coming into contact with a distribution system”. In the OSIRIS report for this incident, Powercor had noted that the cause of the incident was birds nesting on a junction box.

  In responding to the draft incident report, Powercor reviewed this incident and updated its fire start report accordingly.

None of the differences in pole and line identification numbers, voltages or classification of kind of fire start had a material impact on the total IRU calculation.

No consultation was held with Powercor regarding these differences.

Table 2: Variations in pole and line identification numbers

OSIRIS report	Cause of the variation		
	typographic error	different data	data not in OSIRIS
20180710PWA_01	line id		
20180723PWA_01	line id		
20181129PWA_01	line id		
20190211PWA_02	pole id		
20190215PWA_02			pole id
20190409PWA_04	line id		
20190603PWA_03	line id		
20190607PWA_05	line id		

Verification of the 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. 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 amounts.

While some differences have been identified, ESV recognises that there will always be errors in any reporting involving the manual entry of data and manual transfer of data between systems. Powercor should be commended for the accuracy of its fire start report and its OSIRIS reporting. In the first fire start report that ESV validated for 2016-2017 financial year, there were extremely high levels of difference between the two data sources. Powercor, and its regulatory reporting staff, have clearly put in significant effort to ensure the alignment of reporting to the AER and ESV.

In responding to the draft incident report, Powercor removed one of the previously reported fires as it had not been caused by the network. This resulted in an amendment of the total IRU amount. ESV reviewed the changes made by Powercor and can confirm that the total IRU amount of 218.32 provided in the Powercor 2018-2019 fire start report (*Powercor F-Factor RIN 2018-19 (Ver 1.4).xlsm*) is correct.

Note on EM-COP Fire Danger Ratings data

The EM-COP website provides a function whereby users can download a spreadsheet of the historic Fire Danger Ratings for use in the F-factor reporting process. The DNSPs use this data to determine the appropriate Fire Danger Ratings to attach to their fire start reports.

In undertaking the validation process, ESV identified that the spreadsheet included several types of suspect data:

- repeated rows — the time stamp is the same as the previous row and the FDR data is duplicated
- new data — the time stamp is the same as the previous row but the FDR data has been altered, generally to include a row of zeroes that is interpreted as “no forecast”
- backward step — the time stamp for the row pre-dates the previous row, generally without changing the data

Repeated rows and backward steps generally do not affect the fire start reporting exercise. The insertion of new rows with “no forecast” data potentially can have a significant impact on the fire start reports.

In a review of records from 1 July 2014 to 20 November 2019, ESV identified 203 suspect entries in the data broken down as follows:

- two instances that occur before the 2018-2019 financial year; both of these are repeated rows
- 41 instances in 2018-2019, including six repeated rows, 24 rows with new data, nine backward steps with new data and two backward steps with repeated data
- 160 suspect rows in 2019-2020, including 40 repeated rows, 54 rows with new data, 34 backward steps with new data and 32 backward steps with repeated data.

The frequency of errors occurring seems to be escalating and potentially poses a significant risk to the accuracy of next year’s fire start reports.

This issue has been brought to the attention of the AER. It has also been raised with DELWP Powerline Bushfire Safety Program as the client for the EM-COP reporting.

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

With the recent updates to OSIRIS that allow the DNSPs to report locations by latitude and longitude rather than address (with coordinates inferred from the address), ESV will be looking to extend the validation reporting for future years to a broader check of the location data in the fire start reports. We will still identify locations where there are material differences, as well as report on broader alignment of data between the AER and ESV data.

Table 4: 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 five differences between the assessment of the fire type made by Powercor and that made by ESV in the draft validation report. In reviewing the draft validation report, Powercor amended the differences. It also undertook further investigation of one incident and determined that, in line with ESV's position, this fire was not reportable under the F-Factor Scheme. This resulted in a change to the total IRU amount. There were no differences in the final fire start report.
Clause 6(3)(e)(ii)	Comparative analysis — IRU-specific factors	There were two differences in the location in the Powercor fire report that were potentially material to the calculation of the total IRU amount. These differences were addressed in the fire start report used to calculate the total IRU amount below.
Clause 6(3)(e)(iii)	Comparative analysis — non-IRU factors	There were six differences between the fire start report and OSIRIS in relation to pole identification number and two in relation to polyphase electric line identification number. Powercor confirmed the data in the fire start report and amended OSIRIS accordingly.
Clause 6(3)(e)(iv)	Comparative analysis — non-IRU factors	There were no differences between the fire start report and OSIRIS in relation to voltage of the line involved in the fire.
Clause 6(3)(e)(v)	Verification of IRU amount	The total IRU amount of 218.32 provided in the fire start report (*Powercor F-Factor RIN 2018-19 (Ver 1.4).xlsm*) is correct.
Clause 6(3)(f)	Completeness assessment	Powercor had reported all fires to ESV as the relevant entity.