

ESV Validation Report

Jemena 2019-2020 Fire Start Report

Draft Report

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.

Jemena provided its fire start report to the Australian Energy Regulator (AER) on 21 September 2020. This report covered the period 1 July 2019 to 30 June 2020.

The AER forwarded the fire start report to Energy Safe Victoria (ESV) on 22 September 2020 for validation by 30 November 2020. 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 Jemena 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 Jemena 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 Jemena 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: Jemena 2019-2020 Fire Start Report” to the AER on 9 December 2020. The AER will provide a copy of this report to Jemena and invite Jemena to respond with any comments. Any comments received from Jemena will be reviewed and a final report issued by 15 February 2021.

Based on the analysis presented in this report and the data reported in the amended fire start report (*Fire start report template under f-factor scheme (locked) - 20200921 - Public - revised 20201208.xlsm*), ESV can confirm that the **total IRU amount of 6.40 is correct**.

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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 22 September 2020, the AER provided ESV with the Jemena 2019-2020 fire start report for validation. This comprised the following documents:

- Attachment 1 – Fire start report template under f-factor scheme (locked) - 20200921 - Public Excel spreadsheet
- Attachment 2 – FY20 F-Factor RIN Statutory Declaration - Signed - 20200921 - Confidential PDF document
- Attachment 3 – FY20 RIN F Audit Opinion - 20200921 - Confidential PDF document
- Attachment 4 – JEN fire start report FY19-20 - 20200921 - Public PDF document

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

As per previous practice, ESV would seek additional information directly from the DNSPs where ESV deemed it necessary for the purposes of validation. 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 OSIRIS¹
- 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.

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 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 Jemena 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 Jemena'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 Jemena.

Completeness assessment

We compared the records provided in the Jemena 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 no differences between the Jemena fire start report and ESV's OSIRIS records.

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 the 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 three incidents where the differences in information have the potential to materially affect the IRU for the incident. None were associated with the location or timing data. Two were related to the fire danger rating attached to the incident, and the third was related to the location area associated with the reported latitude and longitude. ESV reviewed each of these three incidents in detail (Table 1). In two instances, the error had resulted in Jemena overestimating the Ignition Risk Units attributed to the incident and one underestimated the IRU.

ESV wrote to Jemena on 30 November noting the discrepancies and the need to update the Jemena fire start report accordingly. Jemena reviewed all three incidents, confirmed ESV's findings and, on 8 December 2020, issued an updated fire start report (*Fire start report template under f-factor scheme (locked) - 20200921 - Public - revised 20201208.xlsm*).

Table 1: Material differences the fire start report

OSIRIS report	Amend OSIRIS	Amend fire start report	ESV and Jemena commentary
20191229JEM_01	No	Yes	There was no discrepancy between the fire start report and OSIRIS as to the date and time of the incident. ESV's assessment found that the fire danger rating for the incident had been incorrectly identified as <i>Very High</i> . While this is the rating that applies later in the day, the rating at the time of the incident was <i>High</i> . Jemena reviewed ESV's analysis and confirmed the finding.
20200824JEM_01	No	Yes	There was no discrepancy between the fire start report and OSIRIS as to the date and time of the incident. ESV's assessment found that the fire danger rating for the incident had been incorrectly identified as <i>High</i> . While this is the rating that applied earlier in the day, the rating at the time of the incident was <i>Low-Moderate</i> . Jemena reviewed ESV's analysis and confirmed the finding.
20190227SPN_02	Yes	No	There was no discrepancy between the fire start report and OSIRIS as to the latitude and longitude of the incident. ESV's assessment found that the incident had incorrectly been attributed to an <i>HBRA only</i> location area when it should be in an area designated as <i>within area delineated on plan LEGL/16-354</i> . Jemena reviewed ESV's analysis and confirmed the finding.

Comparative analysis — non-IRU factors

ESV undertook a comparison of the data in the Jemena 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 seven incidents with differences between the fire start report and OSIRIS. Four related to formatting differences in the line identifications between the data sets (e.g. the fire start report lists the line as AW9 whereas it is listed as AW09 in OSIRIS), one recorded a different line number (CN10 in the fire start report and CN04 in OSIRIS) and two related to differences in the voltage. None of the differences related to the asset identification numbers. Table 2 provides a breakdown of these findings.

None of the differences in line identification numbers or voltages had a material impact on the total IRU calculation.

No consultation was held with Jemena regarding these differences.

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 no fire starts where ESV would have classified the fire differently to Jemena.

Table 2: Variations in pole id, line id and voltage

OSIRIS report	Cause of the variation		
	format difference	different data	data not in OSIRIS
20191217JEM_03	line id		
20200103JEM_08	line id		
20200103JEM_14		voltage	
20200104JEM_01	line id		
20200106JEM_02	line id		
20200224JEM_01		voltage	
20200305JEM_02		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 Jemena to determine whether Jemena had correctly assigned the multipliers for each fire start. There were no differences in the multipliers or IRU amounts.

As part of the validation process, ESV identified differences in the fire start report that had a material impact on the total IRU amount; Jemena subsequently issued an updated fire start report.

ESV can confirm that the total IRU amount of 6.40 as reported in the final fire start report (*Fire start report template under f-factor scheme (locked) - 20200921 - Public - revised 20201208.xlsx*) 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 27 November 2020, ESV identified 46 suspect entries in the data broken down as follows:

- two instances that occur in the 2017-2018 financial year
- 41 instances in the 2018-2019 financial year
- three instances in the 2019-2020 financial year.

Fortunately the issue observed last year seems to have been largely, although not completely, addressed. 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.

Any errors in the 2019-2020 data were removed from the dataset used for the validation analysis.

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 Jemena distribution system separately from other systems managed by the service provider.
Clause 6(3)(e)(i)	Comparative analysis — non-IRU factors	There were no differences between the assessment of the fire type made by Jemena and that made by ESV.
Clause 6(3)(e)(ii)	Comparative analysis — IRU-specific factors	There were no material differences in the date and time of incidents in the Jemena fire report. There were two differences in the fire danger rating and one difference in the location area that were material to the calculation of the total IRU amount. Jemena issued an amended fire start report.
Clause 6(3)(e)(iii)	Comparative analysis — non-IRU factors	There was no differences between the fire start report and OSIRIS in relation to pole identification numbers. There were five differences between the fire start report and OSIRIS in relation to polyphase electric line identification numbers. These differences were not material to the calculation of the total IRU amount.
Clause 6(3)(e)(iv)	Comparative analysis — non-IRU factors	There were two differences between the fire start report and OSIRIS in relation to the voltage of the line involved in the fire. These differences were not material to the calculation of the total IRU amount.
Clause 6(3)(e)(v)	Verification of IRU amount	The total IRU amount of 6.40 provided in the fire start report (<i>Fire start report template under f-factor scheme (locked) - 20200921 - Public - revised 20201208.xlsx</i>) is correct.
Clause 6(3)(f)	Completeness assessment	Jemena had reported all fires to ESV as the relevant entity.