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Mr David Chan
Australian Energy Regulator
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Dear David,

In response to your email dated 22/11/2011 regarding UED's submission on AER's draft decision for the f-factor scheme, we offer the following comments:

1. General

SKM adopted a practical approach during our review of the information submitted by the various DNSPs and their fire start claims. We focussed on the underlying fundamentals associated with fire starts, and on the outage/record management systems and processes of the utilities.

In summary, we concluded that the processes used by DNSPs to collect data related to fire starts were generally robust and well controlled, although a number of specific issues were identified.

In our experience:

- Responsible utilities have historically placed a very high priority on identifying those asset issues which could lead to fire starts and potential loss of life. To suggest that fire starts were previously under-reported suggests that the issue is new prior to the f-factor scheme;
- Utility linesmen and members of the public would not hesitate to report evidence of fire starts. Public calls are generally associated with a visible event. Utility maintenance recording of fire starts are associated with a network outage or reported fault. The utilities have previously recorded fire starts without the fear of loss of incentives or penalty and therefore were more likely to over-report the number of events rather than under-report;
- Issues related to the design, inspection and maintenance of network assets are, in general, the primary drivers in minimising the number of fire starts. Weather conditions (particularly wind, temperature, fuel load, rain) are generally secondary issues which affect the consequences of any fire, rather than the total number of fire starts per annum. Obviously, the consequences of a fire start are greater under conditions of high fuel load, temperatures and wind.

The f-factor scheme will incentivise utilities to focus even further on asset improvements to reduce these risks.

Given this situation, SKM considers that each of the DNSPs should have confidence in their estimates of the typical number of asset failures per year leading to actual fire starts. We also consider that the data provided by the DNSPs, which was used to establish the target f-factor level, represents a balanced view on the number of likely fire starts.

We understand the concern expressed by some utilities regarding the OIC definition of fire start, which may result in some asset issues (e.g. [redacted]) now being classified as fire starts where previously they were not recorded as such. Theoretically, this "unknown" could lead to financial penalties under the f-factor scheme. We also note the statistical analyses presented by UED, particularly by Dr Diamond, on this matter. SKM does not dispute Dr Diamond's statistical analysis or mathematics, except to offer the following general comments:

- The SKM review did not attempt to quantify any "potential error" associated with any change in OIC definition of fire start, nor do we consider this a valid approach. All utilities demonstrated that they were able to retrieve data from their systems to indicate historical values of the number of fire starts. We believe that the analysis could be simplified by better reporting processes but the actual number is unlikely to change without deliberate actions to address root causes;
- We consider that the statistical analysis by Dr Diamond fails to recognise the causal primacy of the network design, inspection and maintenance issues in affecting the number of annual fire starts. These issues are fully under the control of the DNSP. We suggest that analyses linking fire starts to weather data are potentially distracting from the main issues.

  Retrospectively adding fire starts based on weather conditions suggests that fire starts from network assets were previously not a concern of the utility and were therefore under-reported.

  In addition limiting the statistical correlation to temperature and rainfall misses the link between fire events and wind. Wind has the potential to cause debris to be blown in contact with energised lines, causing fire start. However, even with wind, the onus is on the utility to design, operate and maintain the infrastructure to be resistant to wind as well as other weather factors and it would be expected that this would be the asset management focus historically;
- In practice, the contentious categories of [redacted] are likely to only be assigned a fire start "flag" only when an actual asset failure has occurred and caused a

real risk of fire start. Adding this category to future reporting is not expected to make a substantial change to the number of fire start reports as these would have been reported under different broader categories previously;

- The SKM review noted instances of historical "over-reporting" of the number of fire starts rather than under-reporting. SKM considered and attempted to balance the uncertainties resulting from the new OIC definition and the uncertainties associated with DNSP's historical records of fire starts. We suggest that the target numbers assigned to each DNSP represent a reasonable, practical outcome. The scope of work did not require SKM to consider options for managing any uncertainty over the initial "target" value and the consequent financial risk to the DNSPs during the implementation phase of the f-factor scheme.

2. Factors affecting Fire Start Categories

This section provides background information in response to your specific question regarding the factors contributing to each of the fire start categories.

Our view is that:

- The most important factors that contribute to fire starts are to be found in the practices of the DNSPs and not due to the vagaries of weather and other uncontrollable factors. Network design, maintenance and inspection procedures used by the DNSPs are the primary issues and should be their main focus;
- We consider that linking the total number of fire starts to weather conditions (e.g. monthly maximum temperature or total rainfall) is invalid and potentially misleading. Whilst DNSPs have limited ability to minimise storm damage, vandalism, vehicle strikes etc, the network assets must be designed and maintained to suit the local weather conditions (including wind, temperature, rainfall);
- A key issue in relation to the consequences and the cause of fire starts is the effect of wind on the infrastructure. This has not considered in the statistical analyses reviewed.

Table 2 of your email lists the events previously classified as a fire by DNSPs.

Asset failures resulting in grass/vegetation fire

This broad category of fire start can be minimised by appropriate asset design for the local conditions, based on the historical weather data of that region. Appropriate preventative maintenance and regular inspections, or lack thereof, are the next most important factors. SKM

would expect that some of the new categories such as [redacted] would have previously been reported under this category.

The focus should be on factors that can be controlled by the DNSP, e.g.:

- Equipment that is likely to cause fires should not be used in high risk regions, or should be upgraded so that it is safe in those locations;
- Sagging conductors, due to high loads or heating, should be addressed by maintenance or design, spacing, tensioning, sizing or possibly the installation of spreaders to prevent clashing that may result in fire starts;
- Assets should be appropriately earthed and designed to be resistant to lightning damage;
- HV fuses should be fitted and designed so that their operation does not present a fire risk. Fuse operation may be indicator of other issues of design in the distribution network feeder and these issues should be addressed;
- In regions where pole top fires occur frequently due to misty rain, appropriate inspection, the use of different types of cross-arms or even undergrounding should be considered.

Fire start root cause is not environmental conditions, it is the design and maintenance of electrical infrastructure under the control of the distribution utility. Identifying and eliminating the root cause of fire starts should be the management focus in utilities.

Grass/vegetation fires due to animals

Again, design is the most important factor. The use of possum guards, aerial bundled or other insulated conductors and undergrounding can be used to minimise the fires started by animals.

[redacted]

[redacted] may be random events, and possibly argued to be out of the control of the DNSPs, however the design and location of the assets can be major factors in preventing fire starts due to these causes. Instances of [redacted] can be minimised by the DNSP's vegetation management procedures or appropriate design.

DNSPs are, of course, unable to manage all fire starts caused by debris blown onto the lines by high winds or storms but assets can be designed to resist damage due to even wind-blown debris.

Asset failures resulting in asset fire (no grass/vegetation fire)

As previously, network design is the most important factor in minimising these fire starts, supported by appropriate maintenance and inspection procedures.

SKM consider the use of statistical analysis to argue that the previous number of fire starts recorded was too low is not a valid approach. We would expect that in fact, fire starts from electrical infrastructure managed by utilities where there was not previous incentive or penalty were most likely over-reported rather than under-reported, in spite of the change in definition due to the OIC directive.

Yours sincerely

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