# Transmission Rules/Towers Review Working Group

# Meeting Minutes – May 7th, 2015

Time: 9:00 am to 12:00 pm

Location: AESO Offices, 2500, 330 5th Ave SW; 25th Floor; Room 2538 or via Conference Call

Attendance List:

| Attended | Name | Company | Email |
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| X | [redacted] | AESO | [redacted] |
| | | AESO | |
| X | | AESO | |
| X | | AltaLink | |
| X | | AltaLink | |
| X - CC | | EPCOR | |
| | | ENMAX | |
| | | ENMAX | |
| | | ATCO Electric | |
| X | | ATCO Electric | |
| | | ATCO Electric | |
| | | TFCMC | |
| X | | UCA | |

CC = via Conference Call

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| 1 | [AESO] opened the meeting.<br><br>Review of Project Needs List:<br><br>**Item 108 Conductor Swing Provisions in Rules and ID Document:**<br>AESO ([redacted]) reported that EPCOR's ([redacted]) revision to Section 19 was inserted in its entirety, old section 19 removed. Some discussion of the revision by the WG; ATCO ([redacted]) requested removal of reference to "trees and high equipment" as they were covered with VCE's or not necessary. EPCOR ([redacted]) clarified the "equipment" reference was more for communications towers and facilities (page, 25)<br>**ACTION:** AESO ([redacted]) – update Rules document removing both trees and equipment from section 19, inserting reference to towers.<br><br>**Item 119 Investigation of Galloping Mitigation Methods:**<br>TFOs requested to assemble any information that they may have available on galloping or galloping mitigation devices and provide to the AESO (by May 21st). Working group was advised that much of the information from old galloping studies conducted by TransAlta was not maintained; much of it was purged over the years and it is not clear what, if anything, remains. Primary interest of the AESO was with TransAlta/AltaLink experience with galloping mitigation devices; they were aware that various trials were attempted. AltaLink ([redacted]) and ATCO ([redacted]) committed to investigate what can be found within the TFO's records. AltaLink ([redacted]) suggested that the AESO consider bringing in a third party to provide a documentation outlining state of the art for galloping mitigation devices. UCA ([redacted]) had been informed that the EPRI report on galloping mitigation devices was not published due to the threat of litigation by one of the device manufacturers. |



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**ACTION:** ATCO ([redacted]), AltaLink([redacted]) to check archives to see if any older reports or other documentation remain which can be used to gauge the effectiveness of various galloping mitigation devices.
**ACTION:** UCA ([redacted]) will follow up with Dave Havard on availability of video (by May 21st).
**ACTION:** AESO ([redacted]) will investigate obtaining CEATI study on "State of the Art" paper on galloping mitigation.

AESO ([redacted]) committed to review information provided by TFOs to assess available information before considering the suggestion to bring in a third party.

**Item 124 Phase to Phase Air Gaps:**
AESO([redacted]) reported that no feedback had been received from the TFOs yet on the appendix to the galloping report. Again, outlined the importance of a review because the input parameters for determining this distance could greatly affect the result of the IEEE computation (could range from about 2.1 to over 4m at 240kV depending on input assumptions). ATCO ([redacted]) advised that he believed ATCO had done follow-up work on this; was unsure of the status.
**ACTION:** ATCO([redacted]) will look into progress at ATCO to see if there were some comments or recommendations.
**ACTION:** AESO([redacted]) to work on a proposal for a New table for the ID. [ATCO] to ask [ATCO] about report related to this item

**Item 125 Provide New Definition of TFO Responsibilities Including Environment and Relibility:**
Done – no further action required

**Item 126 Section 10(1) Failure Containment Loading:**
Review completed. No further action required

**Item 127 Section 19 Conductor Swing; Clearance to Edge of Right of Way:**
Re-wording by EPCOR([redacted]) accepted; item complete.

**Item 128 Sub Rule 8; Alternate Wording to Incorporate AESO Weather Maps:**
AESO([redacted]) reviewed wording change with Working Group. Working Group agrees – no further action required; Item complete.

**Item 129 Incorporating 10% wording in Clause 12(d)(i):**
AESO([redacted]) reviewed wording change with Working Group. Some discussion if this might be too high…perhaps 5%? Ultimately Working Group agreed with 10% and [AESO]'s proposed wording – no further action required; Item complete.

**Item 130 Clause 13.3 Sequence of Failure:**
[UCA] (UCA) presented his proposed wording changes for section 13.3 to the Working Group. Much discussion followed. AESO ([redacted]) proposed to remove insulators and hardware from (a), (b) as this had the potential to

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| | drive significant cost into transmission lines with benefits which were difficult to quantify since anti-cascading provisions were already required. Ultimately the WG agreed with UCA([redacted]) proposed changes with the provision that insulators and hardware were removed for suspension-type (tangent, running angle) structures; but retained for dead end structures.<br>**ACTION:** AESO([redacted]) to re-word ID and Rules documents to reflect UCA([redacted]) proposal with the removal of insulators and hardware from the sequence of failure for suspension-type structures.<br><br>**Item 131 Extending Minumum Span Length Without Dampers from 100m to 150m:**<br>This change was not accepted by all among the working group. AESO ([redacted]) pointed out that this would practically exempt all wood pole 138 and 144kV construction from the need for dampers. This did not match with many years of experience in Southern Alberta where vibration damage was known to occur prior to widespread use of dampers. [UCA] (UCA) suggested maintaining the 100m limit but, in the ID document, proposing use of the CIGRE criterion to justify a request for exemption for any transmission line if average spans longer than 100m are strung with wire tensions which would maintain vibration at acceptable levels for undamped conductors and shield wires.<br>**ACTION:** UCA ([redacted]) to propose wording for ID document incorporating CIGRE criterion.<br>**ACTION:** AESO ([redacted]) to restore 100m limit for no dampers in Rules document. |
| 2 | **Reports:**<br>S1 – Galloping:<br>[AESO] has incorporated everyone's comment best he can – except comments from AltaLink ([redacted]) regarding reduced focus on cost in the report. As this was the approved scope and primary focus, AESO ([redacted]) did not seek to address this. AltaLink ([redacted]) retains their comment on the cost focus.<br><br>S2 - Load Report:<br>No further comments have been received since last revision currently posted on website – incorporated everyone's comments from previous meetings.<br><br>S3- 240kV Conductor Sizing:<br>Some information still required from planning. Also requires some clarification of scope with AESO. [AESO] and [AESO] agreed to discuss further to resolve outstanding issues.<br><br>S4- Use of 100 deg C Thermal Limit on 240kV:<br>Draft report has been written and posted on the website for review. On the basis of this draft the Rules Document has been revised to exempt 240kV from the blanket requirement of design for 100 deg C. Based on updated construction costs recently received [AESO] (AESO) needs to revisit some of the numbers on the charts in the report but does not expect the findings to change.<br><br>S5 – Weather Loading Maps<br>No further comments received, hasn't changed since the last revision posted some time ago. |

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| 3 | Other Items:<br><br>Meeting minutes / drafts being posted on website – working group would like to review meeting minutes before being released or posted to website.<br>UCA ([redacted]) had noted several items raising questions for him from the previous meeting minutes. These included:<br>1. Moving the table of strength factors (Table 2) from the Rules document to the ID document. This did not seem to be a good idea as it would then be optional, not mandatory. In fact, these strength factors permit the designer to reduce cost as they are less stringent than those in the CSA C22.3 No 60826.<br>2. previous meeting minutes referring to removal of Section 17.5 – Air Gaps. His impression was that, not only was this to remain, but we were to be adding a table for phase to phase air gaps.<br><br>ACTION: AESO([redacted]) to check minutes relative to item 1 and revise if necessary to correctly reflect discussion.<br>ACTION: AESO([redacted]) to review phase-to-phase air gaps and propose a table of clearances for inclusion in the ID document along with the existing table of phase-to-ground. Assumed input parameters are to be included for information.<br><br>Full industry consultation on the new 502.2 version July 1st (time line) |