

Meeting Minutes – Feb 23, 2015

Time: 9:00 am to 12:00 pm

Location: AESO Offices, 2500, 330 5th Ave SW; 25th Floor; Room 2539 or via Conference Call

Attendance List:

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

CC = via Conference Call

- 1 [AESO] opened the meeting with a brief discussion of its purpose; its primary goal was to review the fairly extensive comments on the 502.2 Rules and Information Documents prepared by ATCO ([REDACTED]) and to resolve any remaining issues related to them (copy attached).

Discussion proceeded item by item through the [ATCO] letter:

Cover Letter:

1. "It is ATCO's view that this will lead to a system of continual requests for deviations in every project..."
 - AESO ([REDACTED]) commented that this has not been their experience so far. Requests have been infrequent and those which have been seen have typically been turned around in 30 days.
 - AESO ([REDACTED]) observed that, if there is an area where frequent requests are being received, then this may be a signal that some revisions should be considered to that rule.
2. "Lastly, the rule seems to be very focused on reliability and cost. ATCO is also concerned that safety and environmental stewardship have not been given the consideration they should..."
 - ATCO ([REDACTED]) provided some additional context; recent concern from the general public for avian protection along with environmental protection and siting pressures.
 - UCA ([REDACTED]) noted that safety is not part of AESO's mandate; that is within the TFO's domain. Suggested some acknowledgement either in the rules or information document of the obligation for environmental protection.
 - No specific proposals were offered. No action taken on this item.

Rule Comments:

1.1 Section 3 Functional Specification:

- AESO ([REDACTED]) noted he was in full agreement with the content and sentiments expressed by ATCO. The AESO supports that the project scope should be fully agreed to up front.
- No further action proposed or taken.

1.2 a) Concern that section 8 indicates further study of historical weather data is required.

- AESO ([REDACTED]) noted that this was not the intent. The AESO has already supplied weather maps covering the entire province and further study should not normally be required.
- ATCO ([REDACTED]) observed that this was not clear from the wording of the clause.

ACTION: [AESO] agreed to review this clause and propose alternate wording incorporating use of the AESO weather maps.

1.2 b) For 144kV limiting loads to CSA Medium A without use of AESO wet snow vertical and wind loadings would result in cost reductions. May request exemptions on projects.

- ATCO ([REDACTED]) suggested that, for example, there may be a case to circumvent reliability based design criteria specified in the 502.2 rules in the case of a radial feed to an industrial customer; particularly if they were prepared to accept lower levels of reliability for reduced cost.
- AESO ([REDACTED]) felt that this was reasonable, and would probably be considered by the AESO. However, he felt that these cases would be infrequent.
- UCA ([REDACTED]) cautioned that, if ATCO relied only on deterministic design loads specified in the CSA for transmission lines, they would probably be the only Canadian utility to do so. Canadian utilities have all moved or are moving to reliability based design.

No action proposed.

1.2 c) ATCO understands the probabilistic basis of rule 502.2 is in the process of being re-affirmed by the AESO...ATCO has no ability to defend this work in regulatory hearings and will simply refer to AESO authority here when necessary.

- AESO ([REDACTED]) agreed. AESO is confident in the reputation and expertise of the team retained to do this work.

No action proposed.

1.3 a) The existing Rule 502.2 specifies ACSR-type conductor only may be used on bulk transmission lines...As industry experience continues to evolve and other types of high-temperature low sag conductors appear....ATCO Electric will ask for exemptions from Rule 502.2...

- AESO ([REDACTED]) Agreed, AESO would be supportive of this. The 502.2 rules have already been revised to

include ACSS (high temperature) conductor.

No action proposed.

1.3 b) Section 12(d)(i) speaks to the identification of cost savings associated with small changes in the transmission line loading requirements. ATCO Electric interprets this as referring to electrical loading, and recommends that Rule 502.2 define “small” as being 10% of the MVA value given in the FS.

- AESO (██████) Agreed, this has been commented on previously. Should this perhaps be added to the ID?
- ATCO (██████) agreed that this would be helpful.

ACTION: [AESO] agreed to review this clause and propose alternate wording for the Information Document incorporating use of the 10% guideline.

1.4 It is still not clear to ATCO Electric that the standard sequence of failure set out in the Section 13(3) ... meets the intent of minimizing outage time and costs....Therefore ATCO Electric fully intends to utilize the provision of Section 13(6) and ask the AESO for approval in the FS when needed for a sequence of failure which deviates from Rule 502.2...

- AESO (██████) AESO would review all deviation requests.
- UCA (██████) Also relating to this topic – recalled that there had been some agreed wording previously discussed around excluding steel and composite pole structures from the sequence of failure; not just wood poles. This did not seem to make the most recent revision. Impacts both clause 10.8 and 13.1.
- UCA (██████) noted that clause 13.3 specifies “tangents followed by their foundations and hardware”. Not clear on what constitutes hardware. Does this include insulators?

ACTION: [UCA] had some thoughts around possible wording changes that may assist. Will propose to AESO. The AESO (██████) will review and incorporate wording.

1.5 a) ATCO Electric is strongly committed to its policy of environmental sustainability, which includes addressing potentially negative avian interactions with its facilities....

- Working group fully in agreement. No actions requested or proposed.

1.5 b) ATCO Electric has increasing avian protection requirements to satisfy in wetlands. A typical design which can reduce the likelihood of bird strikes is to remove overhead shieldwires in the vicinity of wetlands.....

- AESO (██████) noted that this provision has already been incorporated into the latest draft revisions to the 502.2 Rules.

No further actions proposed.

1.6 A single change is proposed in section 15(1), changing the average span length at which vibration dampers must be installed from 100m to 150m....

Working group generally in agreement. UCA () suggested a check with CIGRE approach and report at next meeting for final decision.

ACTION: UCA () committed to review with CIGRE methods.

1.7 a) By specifying 100°C conductor temperature, Rule 502.2 effectively curtails the ability for line optimization (LO) studies to produce the lowest initial customer cost.....

Working group engaged in extensive discussion. AESO () noted that preliminary results from his report on optimized conductor on 240kV tended to support ATCO's position. Some discussion of 144kV, is it similarly effected? Working group elected to table this discussion pending completion of [AESO]'s report to AESO. Further discussion required.

1.7 b) ATCO Electric does not agree with the statement in the Information Document that LO studies and 100°C are not in conflict. The implication is that they are independent of one another and from a cost perspective this is not correct...

AESO () noted that preliminary study tends to support ATCO's observation.

Further discussion required; tabled to meeting following issue of [AESO]'s report to AESO.

1.8 ATCO Electric is concerned that the proposed Rule 502.2 continues to exempt 138kV or 144kV transmission lines built within road allowances from requiring horizontal clearance to the edge of a right-of-way (Section 19(2))...

- UCA () Understood this was to recognize different practices between AltaLink and ATCO.
- ATCO () Part of the reasoning for specifying minimum right-of-way widths for cross-country alignments was to avoid the situation where third-party constructors who do not intend to operate a system could "low-ball" proposals by bidding right-of-way widths that are insufficient for safe operation of the line. The argument was presented that a minimum standard was required. Why would this not apply to lines on road allowance as well?
- AltaLink () AltaLink would have no objection to these requirements.
- EPCOR () Urban utilities make use of setback requirements to permit construction of lines while maintaining swing clearances. Securing easement into property may be safer, but is likely to be very expensive. If clause 19.2 were removed, then the urban utilities would have to request a variance from the AESO for rule 19 for a specific project if costs were prohibitive.
- AltaLink (); ATCO () agreed.

ACTION: AESO () will arrange to remove clause 19.2 from the current draft ending the exemption of lines on road allowance from the swing clearance provisions for minimum right-of-way width.

1.9 ATCO is pleased with the proposed change by the AESO to reduce the strength requirements of

slackspan insulators.....

No action requested, none proposed.

1.10 The change in this section is in the title itself. The word “static” has been added to the previous title. ATCO Electric supports the proposal for Rule 502.2 to cover static line ratings only....

- Working group was in agreement. No action requested, none proposed.

1.11 a) ATCO Electric has only a few areas in its service area where galloping is documented as being a problem...ATCO Electric recommends that a TFO be allowed to manage this directly and not within a rule.

- AESO (██████) The draft galloping report with the working group indicates that galloping may well extend into ATCO’s northern service territories.
- AESO (██████) maps indicated that potential galloping events appeared less frequent in the North, but did occur. Also noted that confirmation of galloping in most of ATCO’s service territory would be difficult - in remote areas travel to the site would unsafe or impossible under the conditions where galloping occurs.
- AESO (██████) AESO does not presently support removal of this requirement from the 502.2 Rules.

No further action proposed.

1.11 b) ATCO Electric prefers to manage galloping by design (eg: interphase spacers, special suspension clamps) in the particular spans where this is needed rather than to build clearance into the structure.

- AESO (██████) Not clear how ATCO will identify the particular spans.
- AESO (██████) Highly doubtful that galloping would be confined to just a few spans. Any group of spans exposed to the right icing and wind conditions is capable of galloping (other than short, low tension spans). Provision of anti-galloping devices for all spans is not likely to be more cost effective than providing galloping clearances.
- AESO (██████) AESO would be open to considering variances on a project by project basis, particularly where anti-galloping devices could be used, but does not support removal of the Section 24 requirements at this time. AESO is supportive of all initiatives around the development testing of anti-galloping devices.

ACTION: AESO (██████) will arrange to remove clause 19.2 from the current draft ending the exemption of lines on road allowance from the swing clearance provisions for minimum right-of-way width.

1.11 c) ATCO Electric supports Section 26 Provisions for Maintenance. If the requirements of this section can be met without needing tower geometries capable of providing galloping clearances, this may reduce costs.

- No action requested, no actions recorded.

1.11 d) Differential ice loading is a major design consideration for ATCO Electric and is supported by our experience. ... ATCO Electric is committed to including this in any or its designs.

- AESO ([REDACTED]) Depending on the electrical clearances chosen for this, we found that this criterion nearly as stringent to the design as galloping clearances.

No action requested, no actions recorded.

1.11 e) Section 24(3) specifies 60 Hz clearance conditions. The AESO should specify the clearance condition for +/- 500kV Direct Current bulk transmission lines.

- ATCO ([REDACTED]) requested clarification of Rule 24(3) regarding 60 Hz flashover; clearly should apply to AC only.
- AESO ([REDACTED]) Does not see any likelihood of further HVDC construction in the near future. Does not see much value in including this clearance in the 502.2 Rules or ID.

ACTION: AESO ([REDACTED]) will clarify reference in rule 24(3) to AC clearance.

Non-Rule Comments:

Another Round of Tower Development

2.1 a) The AESO initiated its Rule 502.2 review partly to ensure any cost savings could be identified within a revised Rule 502.2 and be used in another round of tower development either by revising the R series of towers or by creating a new series.

- AESO ([REDACTED]) noted that there was no supposition that another round of tower development would be required. The R-series towers were developed for the 1100 MVA work upcoming at the time of their development. They would be unlikely candidates for any currently proposed work.

No further action proposed or taken.

2.1 b) Should the AESO determine it needs another round of tower development, ATSO Electric recommends the tower be designed taking the costs of foundations and soil disturbance into account. These are significant present-day costs which can reasonably be expected to influence new tower designs.

- General agreement among working group.

No further action proposed or taken.

	<p>2.2 Larger Conductor Configurations</p> <p>The WG discussed that other jurisdictions string multi-bundle 1590 ACSR Falcon conductor and that Alberta should do so as well. ATCO Electric said that this can certainly be done however it has been proven to be slow and expensive.</p> <ul style="list-style-type: none"> • UCA (██████) observed that 1590 can be bundled and even larger conductors have been used on a number of projects out East. However does not see any upcoming applications in Alberta. Agreed that it would be expensive. <p>No further action proposed or taken.</p>
2	<p>Other Items:</p> <p>[AESO] reviewed preliminary findings on the 240kV Optimized Conductor report. Early indications were that the selection of a 100 degree limit on the conductor could, in fact, influence the optimum conductor choice. Early indications were based upon work from limited data and needs further revision. Further work required to finalize report.</p>