

ISO Rule Section 502.11 (Substation) Workgroup meeting minutes – Final

Date: September 17, 2015

Time: 10:00 am – 3:00 pm

Location: 1530 ATCO Centre 10035 – 105 St. NW, Edmonton, AB

Attended	Name	Company
X	[REDACTED]	AESO
	[REDACTED]	AESO
	[REDACTED]	AESO
X	[REDACTED]	AESO
X	[REDACTED]	AltaLink
	[REDACTED]	AltaLink
X	[REDACTED]	ATCO Electric
X	[REDACTED]	ATCO Electric
X	[REDACTED]	EPCOR
	[REDACTED]	EPCOR
X	[REDACTED]	ENMAX
X	[REDACTED]	ENMAX
	[REDACTED]	TransAlta

1. Welcome and finalization of August 27th meeting minutes

- [AESO] tabled the draft minutes of the August 27 meeting to the group.
- Altalink made one correction to the draft minutes in the “Major Equipment – Circuit breakers” section. The 502.2 should be 502.3. Furthermore, 502.11 should specify maximum breaker operating time for all transmission facilities above 100 kV regardless of ownership.
- WG agreed to finalize minutes with above correction. [AESO] will circulate finalized meeting minutes to WG by Friday or Monday.

2. Comments of draft WG terms of reference and finalization of 502.11

- ATCO inquired if the scheduled dates hard set. AESO responded “no necessarily”. They are proposed dates and are subject to change. However, we will make our best effort to adhere to the schedule. Goal is to try to file with AUC by next year.
- ATCO was concerned that AESO can post the minutes online as implied in Appendix A of the draft Terms of Reference, but the AESO stated at the last meeting that the meeting minutes won’t be posted. AESO responded that there is no intention for the AESO to post meeting minutes online. However, keep in mind that minutes can be asked by stakeholders.
- AltaLink commented that independent or third party assessment on the draft rule could provide more balanced views and add to the credibility. AESO responded that there is some budget set aside and when the time comes will discuss that with the WG.
- [AESO] will circulate, by Friday or Monday, revised T of R to WG members for any further review.

3. Discussions on what will be included in the substation rule 502.11

Applicability of the rule

- [AESO] presented proposed language as follows:
 - Section 502.11 applies to
 - (a) the **legal owner of a transmission facility** with at least one rated voltage equal to or greater than one hundred (100) kV;
 - (b) the **legal owner of a generating unit or an aggregated generating unit** directly connected to the **transmission system** through a substation owned by the **generating unit** with at least one rated voltage equal to or greater than one hundred (100) kV; and
 - (c) the **ISO**.
- Enmax proposed to align the applicability with the PDUP rule. ATCO commented that the PDUP rule applies to very small projects and we should not include in 502.11 those minor facilities that have minimal impact on the system.
- EPCOR inquired if the rule is intended to cover all transmission equipment regardless of ownership or just the bulk transmission largely owned by TFOs. The AESO responded that the rule should be applied to all TFOs and customers who build and own transmission substations above certain voltage.
- AltaLink observed that the AEUC codes use the word “*electrical utility system*” as its scope. A substation, once meeting the definition, should be subject to this rule no matter how it is connected. The AESO mentioned that AEUC code refers to both transmission and distribution, and our focus is transmission.
- AltaLink inquired why wind farms, which must follow certain requirements in 502.3, are not subject to 502.11. The AESO responded that both 502.2 and 502.3 have got a voltage threshold, which is 100 kV. All facilities below 100 kV are not subject to 502.2 and 502.3.
- AltaLink saw no problem with bullet (a) in the proposed language, but bullet (b) is irrelevant or redundant. A large generator would use >100 kV to connect to the system anyways. Any generator owning a substation with voltage of 100 kV or higher is automatically covered by bullet (a) anyways. EPCOR agreed that bullet (a) covers customer substations as well. ENMAX agreed to get rid of the ownership idea and just use voltage threshold. ATCO also agreed that the new substation rule applies to all applicable substations regardless of the size of the generator. ATCO further commented that all AESO rules have certain thresholds and this rule should align with them and the EUA. Common language should be used so that there is no confusion. This rule cannot be independent of other rules.
- WG agreed to keep bullet (c) – the **ISO** – in the applicability.
- WG agreed there is no need to include HVDC substations in this rule.
- EPCOR inquired about the risk of excluding 69/72 kV substations and commented that it may be more advantageous for us to include 69 kV. AltaLink proposed to use criteria of “two source terminations” if we want to include 69 kV substations.
- WG members agreed that there may be a need to revisit the “applicability” in the future.
- For now, the “applicability” language is revised to be:
 - For Section 502.11 applies to
 - (a) the **legal owner of a transmission facility** with at least one rated voltage equal to or greater than one hundred (100) kV; and
 - (b) the **ISO**.

Major substation (or key substation)

- [AESO] tabled the following proposed language for discussions:
*The AESO intends to introduce a Major Substation which is defined as “a transmission substation with a voltage of 240 kV or higher with either of the following:
(a) total future terminations (lines/transformers) of 6 or higher; or
(b) transformation capacity of 400 MVA or higher”.*
- [AESO] further explained the rationality of creating a “Major Substation” definition. The main purpose of a major substation is to be able to specify the extra requirements associated with those critical substations having higher impact on the system. The extra requirements may include, but are not limited to, bus layout, reliability level, spare parts, station service redundancy, etc. A major substation should be initially designed and built with the ultimate configuration in mind. For example, a major substation built with a simple bus configuration initially should be easily converted into a breaker-and-half or breaker-and-third configuration down the road without having to knock down and rebuild everything.
- Discussions were on the reasoning to go with a ring-bus, breaker-and-half or breaker-and-third versus simple bus layout. WG agreed that ring-bus, breaker-and-half or breaker-and-third buses are necessary to avoid single point of failure that may shut down the entire substation.
- EPCOR commented that the definition should be based on criticality instead of major or minor. It should be based on transformation capacity and the local constraints.
- AltaLink would like to use “system substation” instead of “major substation”.
- EPCOR commented that if we use the definition of “major substation”, and require that it cannot lead to entire substation failure if losing one major element, that would determine what configuration to use in the substation.
- AltaLink favors defining the service reliability level instead of defining the ultimate bus layout. AltaLink also noted that the ultimate bus layout should apply to major substations only, and there is no prescribed configuration for other “normal” substations.
- ENMAX mentioned that the AESO’s major focus is system reliability and stability. ENMAX would like to see a standard that addresses what should be the minimum requirement to serve customers. This rule should speak to that.
- ATCO favors that clear minimum reliability requirement be set, so that it would help defend the project in the regulatory process.
- All WG members appear to support the idea of a “major substation” or “system substation”. However, no firm conclusions were made on what defines a major substation. WG agreed to discuss this again once the reliability/availability levels are set. Further discussions in future meeting on the following points will be made:
 - Number of terminations
 - Should transformer terminations be included?
 - Threshold of transformation capacity

Reliability and Availability

- [AESO] tabled ideas of measurements of reliability and availability, and asked several questions to WG members for discussions.
- WG agreed that SAIFI and SAIDI should not be used for reliability, because of the lack of data collection and no apparent benefit.
- All WG members generally agreed that there should be some sort of minimum reliability and availability requirements for substations.

- EPCOR commented that whatever reliability and availability levels they must be measurable and enforceable.
- AltaLink commented that it is better to set requirements than targets, and thought that reliability should be defined for the major substations as a minimum, and proposed that the reliability should be that no failure of one single element will take out another element in the same substation. ENMAX agreed.
- Discussions were on what defines an element in a substation. AltaLink is to look into this and come back to the next meeting about the definition of “element”.
- ENMAX questioned on what would happen if the requirements are not met.
- The AESO asked around what minimum design criteria or reliability level each TFO employs in their existing substation design policy. For instance, AESO’s Functional Spec shows bus layout, which is originally from the TFOs. ENMAX commented that the proposed layout is provided to the AESO but AESO can change it if it is not consistent with AESO’s expectation.
- EPCOR suggested that AESO state in the rule that when single failure occurs, TFO is required to restore service within certain days. ENMAX is concerned about cost ramifications of saying this.
- AESO recommended that we should focus on the N-1 or N-2 criteria. WG agreed.

ACTION ITEMS

- The AESO to send out finalized minutes of the August 27 meeting to WG members by Friday or Monday
- AESO to make changes to the Term of Reference and send to WG members for final comments on Friday or Monday
- WG members to send any further comments on the T of R to the AESO by Tuesday September 18 after which the T of R will be considered as final
- WG members to bring thoughts to the next meeting on the following questions:
 - Should we define a “major substation” (or “system substation”)?
 - If so, what should be the criteria?
- AltaLink to come back with definition of transmission element for next meeting

Meeting adjourned at 3:05 pm.

NEXT MEETING

- Thursday October 29, 2015 at ENMAX office from 10:00 am to 3:00 pm