ISO Rule 502.11 (Substations)

Industry Workgroup Meeting

August 27, 2015

[redacted] AESO

Agenda

- Welcome and Introductions
- Purposes and deliverables of the workgroup
- What will be included in the substation Rule 502.11
- Roles and responsibilities of workgroup members
- Finalize workgroup Terms of Reference
- Project schedule
- Next meetings

Workgroup Members

Company	Primary	Alternative
AltaLink	[redacted] Principal Engineer, Substations	[redacted] Principal Engineer - Major Equipment and HVDC/FACTS
ATCO	[redacted] Senior Manager, Substation Engineering	[redacted] Senior Technical Supervisor, Innovation
EPCOR	[redacted] Senior Manager, Transmission Assets	[redacted] Manager, Transmission Regulatory Affairs
ENMAX	[redacted] Manager, Electrical Engineering	[redacted] Transmission Planning Engineer
TransAlta	[redacted] Senior Regulatory Advisor	

Objective

- To develop a recommendation paper setting out the minimum technical requirements on which the New ISO Rule Section 502.11 will be based
  - The AESO is mandated to provide a safe, reliable and economic operation of the interconnected electric system and promotes a fair, efficient and openly-competitive wholesale market
  - Section 20 of the EUA grants the AESO the authority to make ISO rules
  - Requirement from the AUC Rule 017

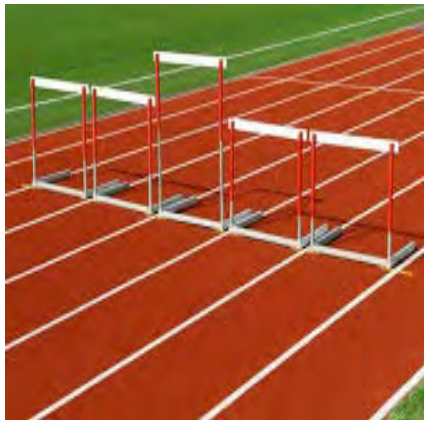
Why Do We Need a Substation Rule?

Reliability

- ISO Rules set out minimum reliability and functionality requirements respecting equipment rating, capacity, availability and reliability
- Meet AESO mandates

Level Playing Field

- An ISO Rule facilitates the safe, reliable and economic operation of the interconnected electric system and promotes a fair, efficient and openly competitive wholesale market for electricity in Alberta

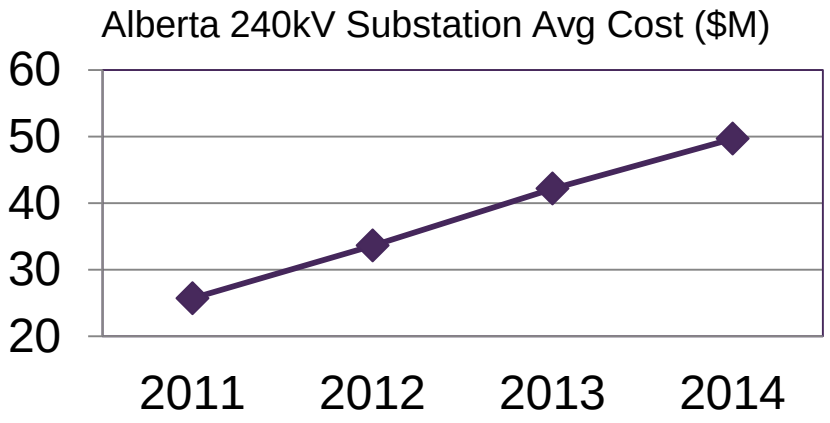


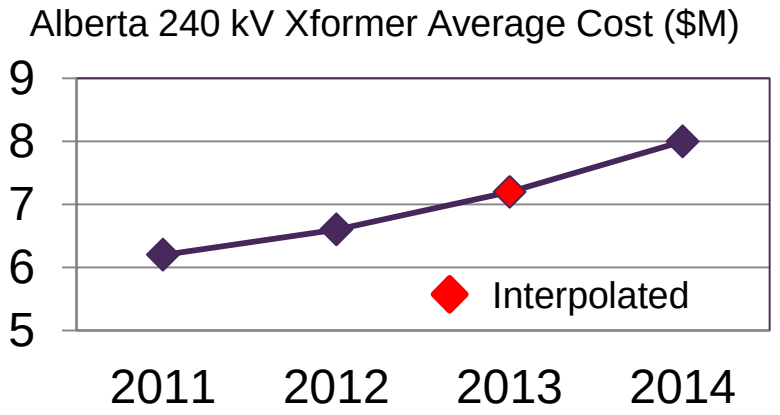
Why Do We Need a Substation Rule?

A uniform and consistent Rule would help better manage connection costs

Substation	Typical Cost	Source
69 kV	$3.7M	USA
138 kV	$10.7M	AIES
240 kV	$34.5M	AIES
500 kV	$128.4M	WECC

Transformer	Avg Cost
138/25 kV 42 MVA	$1.9M
240/25 kV 100 MVA	$6.5M
240/138 kV 300 MVA	$8.0M





Number of Existing Substations

Highest Voltage	TFO Owned	Customer Owned
69/72 kV	70	11
138/144 kV	403	57
240 kV	101	23
500 kV	8	0
TOTAL	582	91

It is estimated that 100 new substations will be built between 2016 and 2022

Why Do We Need a Substation Rule?

Develop Consistent Functional Specification Documents

- It may take several months to develop a Functional Specification for some projects

Assist Study Engineers in Identifying Alternatives

- Substation configurations
- Equipment ratings

Reduce Level of Debates

- Market Participant Choice – TFO vs. customer
- TFO design – TFO vs. its consultants

Context & Background

- Early 2005 – The AESO published several documents entitled "Distribution Point of Delivery Interconnection Process Guideline" (Note: these documents are obsolete)
  - Upgrades to Existing Substations
  - Typical Supply Arrangements
  - Standard of Service
  - Economic Evaluation
  - Transmission vs Distribution Alternatives for Large Customers
- Early 2008 – The AESO drafted a Preliminary Framework for Substation Standard (the document was not published externally)
- Late 2009 – The TOAD process started. A substation standard was contemplated.
- Early 2011 – Revised draft framework developed
- Early 2015 – Process reopened

Roles and Expectations

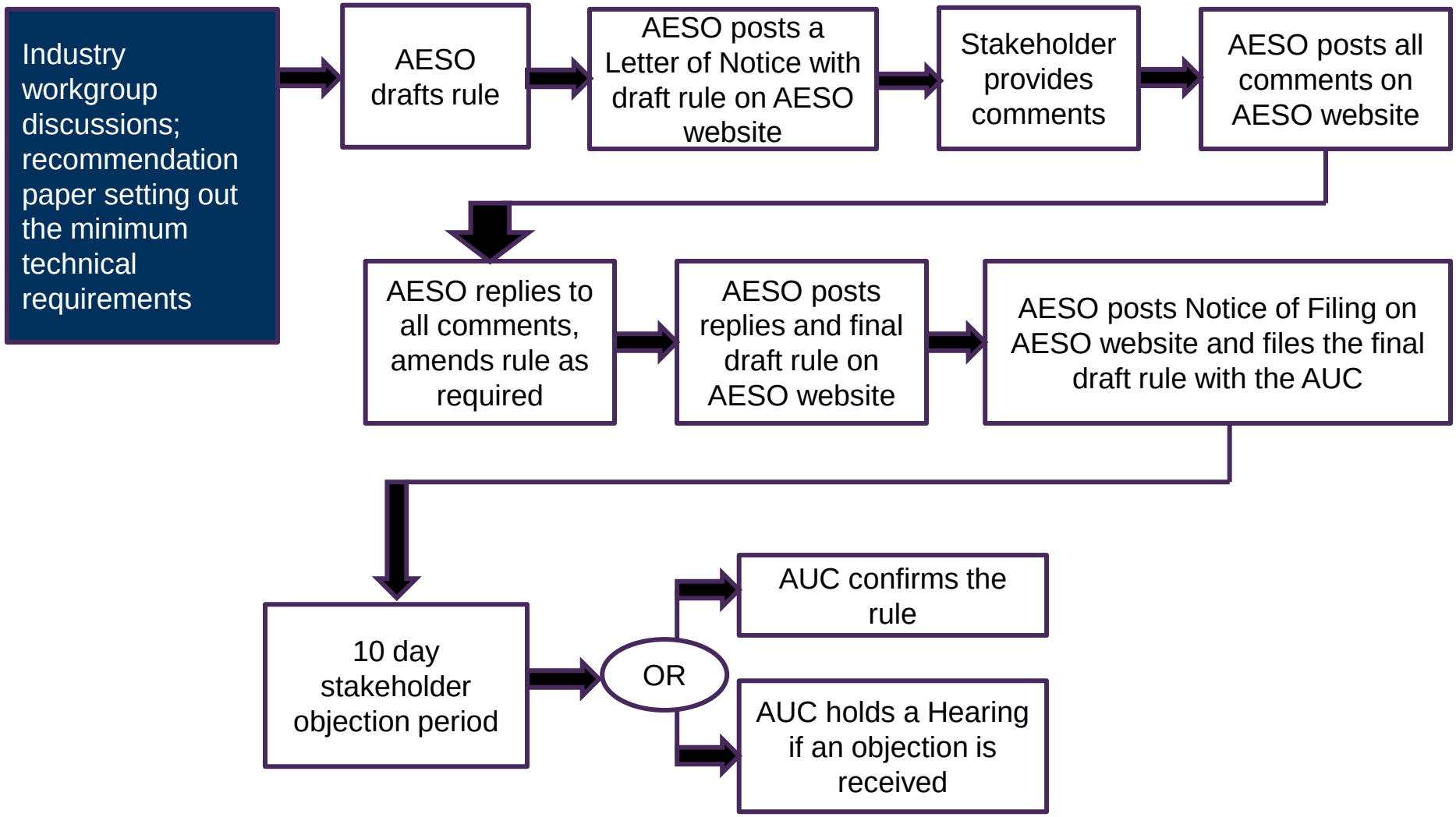
Workgroup members

- Attend all meetings or ask alternates to attend
- Share experience and knowledge with others
- Respect confidential information
- Communicate within your organization with regard to all discussion items

AESO

- Organizes and leads all meetings
- Meeting minutes prepared but not posted
- Consider feedback from workgroup members; determination on changes
- Makes the final determination on content of ISO rules and/or information document (ID)
- Draft recommendation paper and send to WG members

ISO Rules Development Process & AUC Process



ISO Rule 502.11 – Schedule

Activity and Documents	Proposed Schedule
The AESO invites participation in the WG by way of T of R	June 2015
WG members provide comments to the AESO on the draft T of R	by August 2015
The AESO replies to stakeholder comments	by September 4, 2015
The AESO holds technical meetings with WG members to identify, review and discuss the minimum technical requirements of New ISO Rule 502.11	September 2015 to January 2015
The AESO drafts and circulates a recommendation paper to WG members setting out the minimum technical requirements proposed to be included in New ISO Rule 502.11	January 2015
WG members review the recommendation paper and provide written comments (if any) back to the AESO	February 2016

ISO Rule 502.11 – Schedule

Activity and Documents	Proposed Schedule
The AESO reviews comments from WG members and provides written responses. The AESO finalizes the technical requirements	April 2016
The AESO starts drafting New ISO Rule 502.11 and circulates to WG members for final comments	May – July 2016
The AESO finalizes proposed New ISO Rule 502.11, and issues a Letter of Notice for the New ISO Rule 502.11 to all industry stakeholders	September 2016
Industry stakeholders provide written comments on the proposed New ISO Rule 502.11	October 2016
The AESO replies to stakeholder comments and invites position letters from stakeholders	November 2016
The AESO files final proposed New ISO Rule 502.11 with the AUC	December 2016

Workgroup Meeting Schedule

- Meeting starts 10:00 am and ends 3:00 pm
- Alternate between Calgary and Edmonton
  - September 2015 – ATCO?
  - October 2015 – ENMAX?
  - November 2015 – EPCOR?
  - December 2015 – AltaLink?
  - January 2016 – AESO?
- Day of week for each meeting?
- Conference call capability?

Thank you