

# Stakeholder Comment Matrix – July 23, 2019

## Consultation on Proposed new and amended ARS related definitions



Date of Request for Comment: <u>July 23, 2019</u>	Contact: <u>Bharat Vyas</u>
Period of Consultation: <u>July 23, 2019</u> through <u>August 6, 2019</u>	Phone: <u>780-715-2628, 587-646-4537</u>
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Date [yyyy/mm/dd]: <u>2019/08/01</u>	

Listed below is the summary description of changes for the proposed new and amended ARS related definitions. Please refer back to the Consultation Letter under the “Attachments” section to view materials related to the proposed new and amended ARS related definitions. Please place your comments/reasons for position underneath (if any).

Definitions – New		
Existing	Proposed	Stakeholder Comments and/or Alternate Proposal
No definition currently exists for use in the Alberta reliability standards	<p>“<b>radial circuit</b>” means an arrangement of contiguous <b>system elements</b> energized at 50 kV or higher that:</p> <ul style="list-style-type: none"> <li>(a) extend from a <b>system element</b> on the networked <b>transmission system</b> in a linear or branching configuration;</li> <li>(b) connect to one or more of a load facility, a <b>generating unit</b>, or an <b>aggregated generating facility</b>; and</li> <li>(c) comprise the only circuit by which power can flow between the networked <b>transmission system</b> and the facilities</li> </ul>	<p><i>Comment # 1: Insert Comments / Reason for Position (if any)</i></p> <p>Fort Hills Energy Corporation (FHEC) supports the AESO’s proposal to define the term “radial circuit” in order to provide clarity regarding facilities that are radially connected to a networked transmission system. However, FHEC is opposed to the AESO’s proposed definition of this term on the grounds that it is technically deficient and not in the public interest.</p> <p>The AESO’s proposed definition of “radial circuit” may limit its application to only those facilities that are connected to the networked transmission system via a single (only one) transmission circuit, but exclude those that are connected through a single transmission line with multiple circuits, or multiple transmission lines with multiple circuits that terminate at the same electrical node at both ends which provide the only path for power flow between the two nodes.</p> <p>As an example, a load initially connected radially to the networked transmission system through a single circuit may later add a parallel circuit to the transmission line (tower) or another transmission line for redundancy to improve reliability of supply. In this case, the load is still radially connected to the networked transmission system and hence will remain a “radial load”. The number of circuits or lines that connect the load to the networked transmission system does not make any difference to the classification of the load being “radially” fed from the network.</p> <p>This connection scenario can be extended to the connections between the networked transmission system and groups of</p>

	<p>identified in item (b) under normal operating conditions, and includes an arrangement where the circuit energized at 50 kV or higher is connected to another circuit energized at 50 kV or higher, either through a switching device that is operated normally open or through facilities energized at less than 50 kV where the circuit would be a <b>radial circuit</b> if the connection did not exist.</p>	<p>facilities or industrial complex, such as FHEC which employs a redundant connection to its ISD to improve reliability. This redundant connection does not provide alternative paths for power flow in and out of the FHEC complex.</p> <p>Accordingly, FHEC requests that the AESO explain whether the proposed definition of “radial circuit” would elevate FHEC from a “low” to “medium” criticality under relevant CIP rules because of this redundant circuit. FHEC further requests that the AESO update its relevant ID (#2016-006RS) to provide examples of what connection configurations are considered radial versus non-radial.</p> <p>FHEC submits that its current configuration is generally regarded as a single system element connection despite its redundant connection configuration, since both circuits terminate at the same nodes at both ends. This interpretation is consistent with the intent of the defined term “radial circuit” in AESO ID #2016-006RS, specifically the phrase “which is the only circuit for power to flow between the networked transmission system and the facilities of one or more market participants under normal operating conditions...”. This interpretation is also consistent with the common understanding of the term “radial circuit” including the consistent use of this term by Electric Reliability Organizations such as NERC and WECC.</p> <p>FHEC submits that deviating from the commonly understood and commonly used meaning of “radially connected” (i.e. to restrict the meaning to single circuit connections) irrespective of the overall connection scheme may impose significant direct and indirect costs for affected market participants, both in regards to the initial implementation of requirements as well as ongoing personnel and compliance costs.</p> <p>FHEC also notes that the AESO has provided no basis to date (beyond a desire to provide clarity and simplicity) for this potential departure from the general technical and engineering understanding of this term used by other regional reliability councils and power system planners.</p> <p>FHEC further notes that the AESO has not demonstrated that a redundant connection in an otherwise radial configuration poses any unique or specific reliability risk to the BES. Further, the AESO has not demonstrated that the potential adoption of this particular interpretation alleviates any specific reliability risk to the BES, either in FHEC’s case or in respect of any other market participant. A conclusion that a redundant connection is inherently non-radial may appear arbitrary in light of the fact that such interpretation is inconsistent with common usage, in light of the fact that such interpretation could impose significant costs on affected market participants, and in light of the fact that relevant risks have neither been identified nor alleviated by such interpretation.</p> <p>Accordingly, FHEC proposes the following in order to accommodate the above radial connection scenarios. FHEC proposes that the term “radial circuit” be revised to “radial connection”, a term that is frequently referenced in Alberta’s Reliability Standards such as CIP-002-AB05.1. FHEC also proposes that the definition be revised to make all references to “circuit” potentially plural (circuit(s)). In other words, FHEC proposes that “(s)” be added to all references to circuit, in the following manner:</p> <p><b>“radial connection”</b> [or <b>“radial circuit(s)”</b>] means an arrangement of contiguous <b>system elements</b> energized at 50 kV or higher that:</p> <p>(a) extend from a <b>system element</b> on the networked <b>transmission system</b> in a linear or branching configuration;</p>
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		<p>(b) connect to one or more of a load facility, a <b>generating unit</b>, or an <b>aggregated generating facility</b>; and</p> <p>(c) comprise the only circuit(s) by which power can flow between the networked <b>transmission system</b> and the facilities identified in item (b) under normal operating conditions, and includes an arrangement where the circuit energized at 50 kV or higher is connected to another circuit(s) energized at 50 kV or higher, either through a switching device that is operated normally open or through facilities energized at less than 50 kV where the circuit(s) would be a <b>radial connection</b> [or <b>radial circuit(s)</b>] if the connection did not exist.</p>
No definition currently exists for use in the Alberta reliability standards	<p>“<b>system access service</b>” as defined in the Act means the service obtained by <b>market participants</b> through a connection to the <b>transmission system</b>, and includes access to exchange electric energy and <b>ancillary services</b>.</p>	

Definitions – Amended			
Existing	Proposed	Blackline of Existing and Proposed	Stakeholder Comments and/or Alternate Proposal
<p>“<b>bulk electric system</b>” as defined by the Regional Reliability Organization, means the electrical generation resources, transmission lines, <b>interconnections</b>, with neighbouring <b>systems</b>, and associated equipment, generally operated at voltages of one hundred (100) kV or higher; radial <b>transmission facilities</b> serving only load with one (1) transmission source are generally not included in this definition.</p>	<p>“<b>bulk electric system</b>” means all <b>system elements</b> that are included in the following:</p> <p>(i) all <b>system elements</b> that have all terminals energized at 100 kV or higher that are not part of a <b>radial circuit</b>;</p> <p>(ii) a <b>radial circuit</b> comprised of <b>system elements</b> that have all terminals energized at 100 kV or higher where the <b>radial circuit</b> connects to:</p> <p>(a) any facility included in items (iv) through (vii) below; or</p> <p>(b) 2 or more generating resources, being <b>generating units</b> and <b>aggregated generating facilities</b>, that have a combined <b>maximum</b></p>	<p>“<b>bulk electric system</b>” means all <b>system elements</b> that are included in the following:</p> <p>(i) all <b>system elements</b> that have all terminals energized at 100 kV or higher that are not part of a <b>radial circuit</b>;</p> <p>(ii) a <b>radial circuit</b> comprised of <b>system elements</b> that have all terminals energized at 100 kV or higher where the <b>radial circuit</b> connects to:</p> <p>(a) any facility included in items (iv) through (vii) below; or</p> <p>(b) 2 or more generating resources, being <b>generating units</b> and <b>aggregated generating facilities</b>, that have a combined <b>maximum authorized real power</b> higher than 67.5 MW;</p> <p>(iii) a transformer that has its primary terminal and at least one secondary terminal energized at 100 kV or higher;</p> <p>(iv) a <b>generating unit</b> that has a <b>maximum authorized real power</b> higher than 18 MW where <b>system access service</b> is provided through a switchyard that is directly connected to <b>transmission facilities</b></p>	<p><i>Comment # 1: Insert Comments / Reason for Position (if any)</i></p> <p>Comments from above sections are applicable to eventual definition of “bulk electric system”.</p>

	<p><b>authorized real power</b> higher than 67.5 MW;</p> <p>(iii) a transformer that has its primary terminal and at least one secondary terminal energized at 100 kV or higher;</p> <p>(iv) a <b>generating unit</b> that has a <b>maximum authorized real power</b> higher than 18 MW where <b>system access service</b> is provided through a switchyard that is directly connected to <b>transmission facilities</b> energized at 100 kV or higher, including all <b>system elements</b> from the terminal of the <b>generating unit</b> to the <b>transmission facilities</b> energized at 100 kV or higher;</p> <p>(v) an <b>aggregated generating facility</b> that has a <b>maximum authorized real power</b> higher than 67.5 MW where <b>system access service</b> is provided through a switchyard that is directly connected to <b>transmission facilities</b> energized at 100 kV or higher, including all <b>system elements</b> from the collector bus to the <b>transmission facilities</b> energized at 100 kV or higher, and excluding the <b>generating units</b> and the collector system feeders;</p> <p>(vi) all <b>generating units</b> and <b>aggregated generating facilities</b> where <b>system</b></p>	<p>energized at 100 kV or higher, including all <b>system elements</b> from the terminal of the <b>generating unit</b> to the <b>transmission facilities</b> energized at 100 kV or higher;</p> <p>(v) an <b>aggregated generating facility</b> that has a <b>maximum authorized real power</b> higher than 67.5 MW where <b>system access service</b> is provided through a switchyard that is directly connected to <b>transmission facilities</b> energized at 100 kV or higher, including all <b>system elements</b> from the collector bus to the <b>transmission facilities</b> energized at 100 kV or higher, and excluding the <b>generating units</b> and the collector system feeders;</p> <p>(vi) all <b>generating units</b> and <b>aggregated generating facilities</b> where <b>system access service</b> is provided through a common switchyard that is directly connected to <b>transmission facilities</b> energized at 100 kV or higher and the <b>generating units</b> and <b>aggregated generating facilities</b> have a combined <b>maximum authorized real power</b> higher than 67.5 MW, including all <b>system elements</b> from the terminal of each <b>generating unit</b> and from the collector bus of each <b>aggregated generating facility</b> to <b>transmission facilities</b> energized at 100 kV or higher, and excluding the <b>generating units</b> and collector system feeders of each <b>aggregated generating facility</b>;</p> <p>(vii) a <b>blackstart resource</b>, including all <b>system elements</b> from the terminal of the <b>blackstart resource</b> to <b>transmission facilities</b> that are energized at 100 kV or higher; and</p> <p>(viii) a static or dynamic <b>reactive power</b> resource that is dedicated to supplying or absorbing <b>reactive power</b> to or from the <b>transmission system</b> and is connected:</p> <p>(a) to <b>transmission facilities</b> energized at 100 kV or higher;</p> <p>(b) through a dedicated transformer that is directly connected to <b>transmission facilities</b> energized at 100 kV or higher; or</p> <p>(c) through a non-dedicated transformer that has its</p>	
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	<p><b>access service</b> is provided through a common switchyard that is directly connected to <b>transmission facilities</b> energized at 100 kV or higher and the <b>generating units</b> and <b>aggregated generating facilities</b> have a combined <b>maximum authorized real power</b> higher than 67.5 MW, including all <b>system elements</b> from the terminal of each <b>generating unit</b> and from the collector bus of each <b>aggregated generating facility</b> to <b>transmission facilities</b> energized at 100 kV or higher, and excluding the <b>generating units</b> and collector system feeders of each <b>aggregated generating facility</b>;</p> <p>(vii) a <b>blackstart resource</b>, including all <b>system elements</b> from the terminal of the <b>blackstart resource</b> to <b>transmission facilities</b> that are energized at 100 kV or higher; and</p> <p>(viii) a static or dynamic <b>reactive power</b> resource that is dedicated to supplying or absorbing <b>reactive power</b> to or from the <b>transmission system</b> and is connected:</p> <p>(a) to <b>transmission facilities</b> energized at 100 kV or higher;</p> <p>(b) through a dedicated</p>	<p>primary terminal and at least one secondary terminal energized at 100 kV or higher.</p>	
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	<p>transformer that is directly connected to <b>transmission facilities</b> energized at 100 kV or higher; or</p> <p>(c) through a non-dedicated transformer that has its primary terminal and at least one secondary terminal energized at 100 kV or higher.</p>		
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