

Information documents are not authoritative. Information documents are for information purposes only and are intended to provide guidance. In the event of any discrepancy between an information document and any authoritative document¹ in effect, the authoritative document governs.

1 Purpose

This information document relates to the following authoritative documents:

- Section 502.1 of the ISO rules, *Wind Aggregated Generating Facilities Technical Requirements*;
- Section 502.2 of the ISO rules, *Bulk Transmission Line Technical Requirements*;
- Section 502.4 of the ISO rules, *Automated Dispatch and Messaging System and Voice Communication System Requirements*;
- Section 502.13 of the ISO rules, *Battery Energy Storage Facility Technical Requirements*;
- Alberta Reliability Standard CIP-002-AB-5.1, *Cyber Security – BES Cyber System Categorization*;
- Alberta Reliability Standard CIP-003-AB-5, *Cyber Security – Security Management Controls*;
- Alberta Reliability Standard CIP-004-AB-5.1, *Cyber Security – Personnel & Training*;
- Alberta Reliability Standard CIP-005-AB-5, *Cyber Security – Electronic Security Perimeter(s)*;
- Alberta Reliability Standard CIP-006-AB-5, *Cyber Security – Physical Security of BES Cyber Systems*;
- Alberta Reliability Standard CIP-007-AB-5, *Cyber Security – System Security Management*;
- Alberta Reliability Standard CIP-008-AB-5, *Cyber Security – Incident Reporting and Response Planning*;
- Alberta Reliability Standard CIP-009-AB-5, *Cyber Security – Recovery Plans for BES Cyber Systems*;
- Alberta Reliability Standard CIP-010-AB-1, *Cyber Security – Configuration Change Management and Vulnerability Assessments*;
- Alberta Reliability Standard CIP-011-AB-1, *Cyber Security – Information Protection*;
- Alberta Reliability Standard EOP-001-AB1-2.1b, *Emergency Operations Planning*;
- Alberta Reliability Standard EOP-003-AB1-1, *Load Shedding Plans*;
- Alberta Reliability Standard EOP-004-AB-2, *Event Reporting*;
- Alberta Reliability Standard EOP-008-AB-1, *Loss of Control Centre Functionality*;
- Alberta Reliability Standard FAC-010-AB1-2.1, *System Operating Limits Methodology for the Planning Horizon*;
- Alberta Reliability Standard FAC-011-AB-2, *System Operating Limits Methodology for the Operations Horizon*;
- Alberta Reliability Standard PER-003-AB-1, *Operations Personnel Credentials*;

¹ “Authoritative documents” is the general name given by the AESO to categories of documents made by the AESO under the authority of the *Electric Utilities Act* and regulations, and that contain binding legal requirements for either market participants or the AESO, or both. Authoritative documents include: the ISO rules, the reliability standards, and the ISO tariff.

- Alberta Reliability Standard PER-005-AB-2, *Operations Personnel Training*;
- Alberta Reliability Standard PRC-023-AB-2, *Transmission Relay Loadability*;
- Alberta Reliability Standard TPL-001-AB-0, *System Performance Under Normal Conditions*;
- Alberta Reliability Standard TPL-002-AB1-0, *System Performance Following Loss of a Single BES Element*;
- Alberta Reliability Standard TPL-003-AB-0, *System Performance Following Loss of Two or more BES Elements*;
- Alberta Reliability Standard TPL-004-AB-0, *System Performance Following Extreme BES Events*;
- and
- the ISO tariff.

The purpose of this information document is to provide market participants with guidance regarding the term “radial circuit”.

2 Radial Circuit Terms

The following terms are currently used in authoritative documents to refer to a “radial circuit”:

- radial bulk transmission line;
- radial connection;
- radial customers;
- radial line;
- radially operated circuits;
- radial transmission line;
- radial transmission system;
- transmission facility that radially connects;
- radial transmission lines; and
- radial transmission facilities.

3 Radial Circuit Definitions

(1) ISO Tariff

The AESO received approval of a radial circuit definition for use in the ISO tariff that was approved in Decision 22942-D02-2019.² This radial circuit definition is expected to come into effect by the end of 2020. The approved ISO tariff radial circuit definition is provided below.

² Approved by the Alberta Utilities Commission through Decision 22942-D02-2019, *AESO 2018 ISO Tariff Decision* on September 22, 2019.

“radial circuit”

means an arrangement of contiguous system elements extending from a single system element on the networked transmission system in a linear or branching configuration to the facilities of one or more market participants, 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, including when the circuit is connected to another circuit through a switching device that is operated normally open.

(2) Reliability Standards

The AESO has refined the approved ISO tariff radial circuit definition to add clarity for market participants and is currently proposing that new radial circuit definition for use in the reliability standards. In the AESO’s view, the proposed new radial circuit definition is consistent with the approved ISO tariff radial circuit definition provided above. The AESO plans to forward the proposed new radial circuit definition to the Alberta Utilities Commission requesting approval to adopt this definition for use in the reliability standards in mid-2020. This proposed new radial circuit definition is provided below.

“radial circuit”

means an arrangement of contiguous system elements energized at 50 kV or higher that:

- (a) extend from a system element on the networked transmission system in a linear or branching configuration;
- (b) connect to one or more of a load facility, a generating unit, or an aggregated generating facility; and
- (c) comprise the only circuit by which power can flow between the networked transmission system 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 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 radial circuit if the connection did not exist.

(3) ISO Rules

The AESO intends to consult on the use of the proposed new radial circuit definition in the ISO rules in due course. Until this occurs, market participants can assume that the terms listed in section 2 and found in the ISO rules all have the meaning provided in the proposed new radial circuit definition.

4 Double-Radial Configuration in the ISO tariff

In addition to the above listed “radial circuit” definition, two circuits with the same termination points are also considered a type of “radial circuit” in the 2020 ISO tariff, which is currently in effect. The 2020 ISO tariff refers to this configuration as a “double-radial configuration”.

A “double-radial configuration” is not considered a type of “radial circuit” for purposes of the ISO rules and reliability standards.

The AESO expects to address this discrepancy in future amendments to the ISO tariff.

Revision History

Date	Description
2020-06-08	Updated with latest information on the ISO tariff radial circuit definition. Added the radial circuit definition proposed for use in the

	reliability standards. Provided clarity regarding the current use of “double radial configurations” in the ISO tariff. Updated document to align with the latest AESO drafting practices.
2017-06-15	Initial release