

ISO Rules

Part 300 System Reliability and Operations

Division 304 Routine Operations

Section 304.3 Wind and Solar Power Ramp Up Management



Applicability

1(1) Subject to subsections 1(2) and 1(3), Section 304.3 applies to:

- (a) the **legal owner** of an **aggregated facility** containing wind or solar resources that:
 - (i) is directly connected to the **interconnected electric system** or to an electric system within the **service area** of the City of Medicine Hat, including an **aggregated facility** containing wind or solar resources situated within an industrial complex that is directly connected to the **interconnected electric system** or to an electric system within the **service area** of the City of Medicine Hat; and
 - (ii) has a **gross real power** capability greater than or equal to 5 MW;
- (b) the **operator** of an **aggregated facility** containing wind or solar resources that:
 - (i) is directly connected to the **interconnected electric system** or to an electric system within the **service area** of the City of Medicine Hat, including an **aggregated facility** containing wind or solar resources situated within an industrial complex that is directly connected to the **interconnected electric system** or to an electric system within the **service area** of the City of Medicine Hat; and
 - (ii) has a **gross real power** capability greater than or equal to 5 MW; and
- (c) the **ISO**.

(2) The provisions of this Section 304.3 do not apply to the **legal owner** of an **aggregated facility** containing wind or solar resources that was energized and commissioned after April 7, 2017 and that is identified by its **pool asset** description in an exemption list the **ISO** publishes on the AESO website.

(3) The provisions of this Section 304.3 do not apply to the **legal owner** of an **aggregated facility** containing wind or solar resources that was energized and commissioned:

- (a) prior to April 7, 2017; or
- (b) that is included in the exemption list referenced in subsection 1(2) in accordance with a previous technical requirement, technical standard, **ISO rule** or functional specification;

but the **legal owner** of such an existing **aggregated facility** containing wind or solar resources must remain compliant with the ramp up management requirements set out in that previous technical requirement, technical standard, **ISO rule** or functional specification

(4) Notwithstanding subsections 1(2) or 1(3), if any of the **aggregated facilities** containing wind or solar resources described in subsections 1(2) or 1(3) undergoes one or more:

- (a) facility additions after April 7, 2017 resulting in an increase in the cumulative **gross real power** capability of the **aggregated facility** by an amount greater than or equal to 5 MW; or
- (b) equipment replacements after April 7, 2017 where the equipment replaced has a **gross real power** capability greater than or equal to 5 MW irrespective of whether the cumulative **gross real power** capability of the **aggregated facility** is increased;

then the entire **aggregated facility** will be subject to, and the **legal owner** of the **aggregated facility** must comply with the provisions of this Section 304.3.

(5) The **ISO** may, notwithstanding subsections 1(2), (3) and (4), require the **legal owner** of an **aggregated facility** containing wind or solar resources to comply with any one or more specific provisions or all of the provisions of this Section 304.3 if the **ISO** determines that such compliance is

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necessary for the safe and reliable operation of the **interconnected electric system**.

Requirements

Functional Specification

2 The **ISO** must, in accordance and generally consistent with this Section 304.3, approve a written functional specification containing details, work requirements, and specifications for the design, construction, and operation of an **aggregated facility** containing wind or solar resources and associated **transmission facility** connection facilities.

Real Power and Ramp Rate Limitations

3(1) The **legal owner** of an **aggregated facility** containing wind or solar resources must ensure that the facility has the control capability to limit the **real power** output at the **point of connection**, or at the connection to the **electric distribution system**, in accordance with any limits or instructions contained in any **directive**.

(2) The **legal owner** of an **aggregated facility** containing wind or solar resources must ensure that the **real power** control limit referred to in subsection 3(1) is adjustable from the minimum operating output to the **gross real power** capacity at an average resolution of 1 MW.

(3) The **legal owner** of an **aggregated facility** containing wind or solar resources must, when a **real power** control limit is in effect, ensure that the 1-minute average **real power** output does not exceed the **real power** control limit specified in the **directive** referred to in subsection 5(1) by more than 2% of the **gross real power** capability.

(4) The **legal owner** of an **aggregated facility** containing wind or solar resources must ensure that the facility is equipped with **ramp rate** limiting controls that are:

- (a) capable of limiting the ramp up of the **real power** of the **aggregated facility**; and
- (b) adjustable such that the **ramp rate** does not exceed, in MW per minute, a range from 5% to 20% of the **gross real power** capability.

(5) The **legal owner** of a **aggregated facility** containing wind or solar resources must ensure that the default setting for the ramp **rate** limiting controls referred to in subsection 3(4) is set at 10% of the **gross real power** capability.

(6) The **legal owner** of an **aggregated facility** containing wind or solar resources must ensure that any difference between the **real power** at:

- (a) the **point of connection** or the connection to the **electric distribution system** of the **aggregated facility**; and
- (b) any **collector buses** of the **aggregated facility**,

is compensated for in the **real power** limiting and **ramp rate** limiting controls.

Calculation of the Alberta System Wind and Solar Power Limit

4 The **ISO** must calculate, at a minimum monitoring interval of every 20 minutes, an Alberta system wind and solar power limit for **aggregated facilities** containing wind or solar resources.

Calculation and implementation of the Wind and Solar Aggregated Facilities Power Limit Pro Rata Share

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5(1) The **ISO** must, by means of supervisory control and data acquisition signals, issue **directives** to the **operator** of each **aggregated facility** containing wind or solar resources that includes their power limit pro rata share.

(2) The **ISO** must optimize the pro rata share **directive** described in subsection 5(1), including reallocating any amount that results in an **aggregated facility** containing wind or solar resources exceeding its **maximum capability**.

Methodology Used to Calculate the Alberta System Wind and Solar Power Limit Power Limit Pro Rata Share

6(1) The **ISO** must post to the AESO website the methodology used to calculate the Alberta system wind and solar power limit and the methodology used to calculate the Alberta system power limit pro-rata share for **aggregated facilities** containing wind or solar resources.

(2) The **ISO** must notify **market participants** at least **30 days** in advance of amendments to the methodologies referenced in 6(1) coming into effect.

Revision History

Date	Description
2024-04-01	Amended, as approved in Commission Decision 28176-D01-2023 issued on June 13, 2023.
2021-03-19	Completed administrative amendments to align with red tape reduction goals and ISO drafting principles; corrected typographical errors; and simplified provisions. Consolidated sections 3(4), 3(5), 5(2), 6(1) and 6(3). Removed subsection 3(4), 3(5), 4 and 6(2).
2019-12-11	Removed duplication with new Section 103.14, <i>Waivers and Variances</i> ; standardized functional specifications language; capitalized references to "Section"
2018-09-01	Revised the applicability section to include solar aggregated generating facilities and to apply to an aggregated generating facility that has a gross real power capability equal to or greater than 5 MW; added real power and ramp rate limitations requirements; revised the requirement to issue a power limit pro rata share from when a predetermined criterion is met to at the start of each monitoring interval; removed the methodologies used to calculate the Alberta system wind power limit and pro rata share; added subsection 7; revised subsection 4 to allow the energy market merit order provisions of the ISO rules and pro rata share to occur concurrently; and administrative amendments.
2015-04-01	Rule references have been updated in subsection 5(1)(a)
2015-04-01	The words "or dispatch" were added in subsection 5(1)(b).
2013-01-08	Previously defined terms have been un-defined and the words have been un-bolded.
2011-12-01	Initial release.