

Proposed Updates to Market Rules Chapter 4 Appendices 4.2 and 4.3

Technical Panel – May 26th, 2020

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Agenda

- Overview
- Background
- Proposed updates to Appendix 4.2 and 4.3
- Stakeholder engagement
- Next Steps

Overview

Purpose:

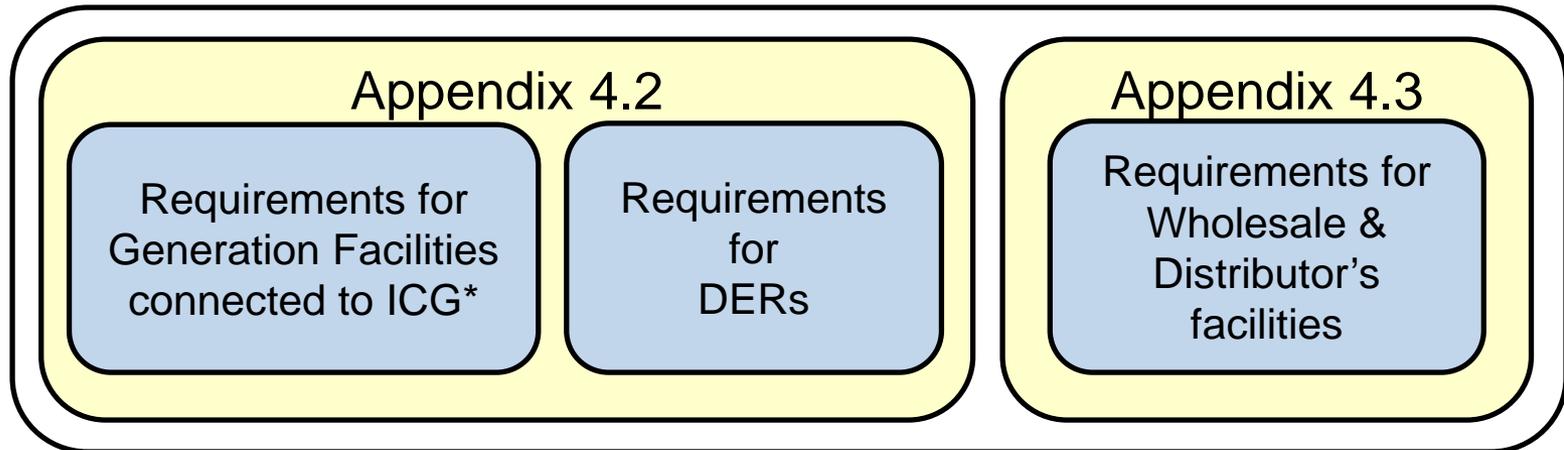
- To update Technical Panel on proposed amendments to Appendix 4.2 and 4.3 of the Market Rules

Summary:

- Appendix 4.2 and 4.3 prescribe the performance requirements for generation facilities, wholesale customers and distributors
- The updates include:
 - Restructuring App. 4.2 and App. 4.3 by market participant type
 - Aligning performance requirements for distributed energy resources (DERs) with CSA 22.3 #9
 - Clarifying existing performance requirements for generation resources and loads

Background

- Technical performance requirements are defined in Appendices to *Chapter 4 - Grid Connection Requirements*:

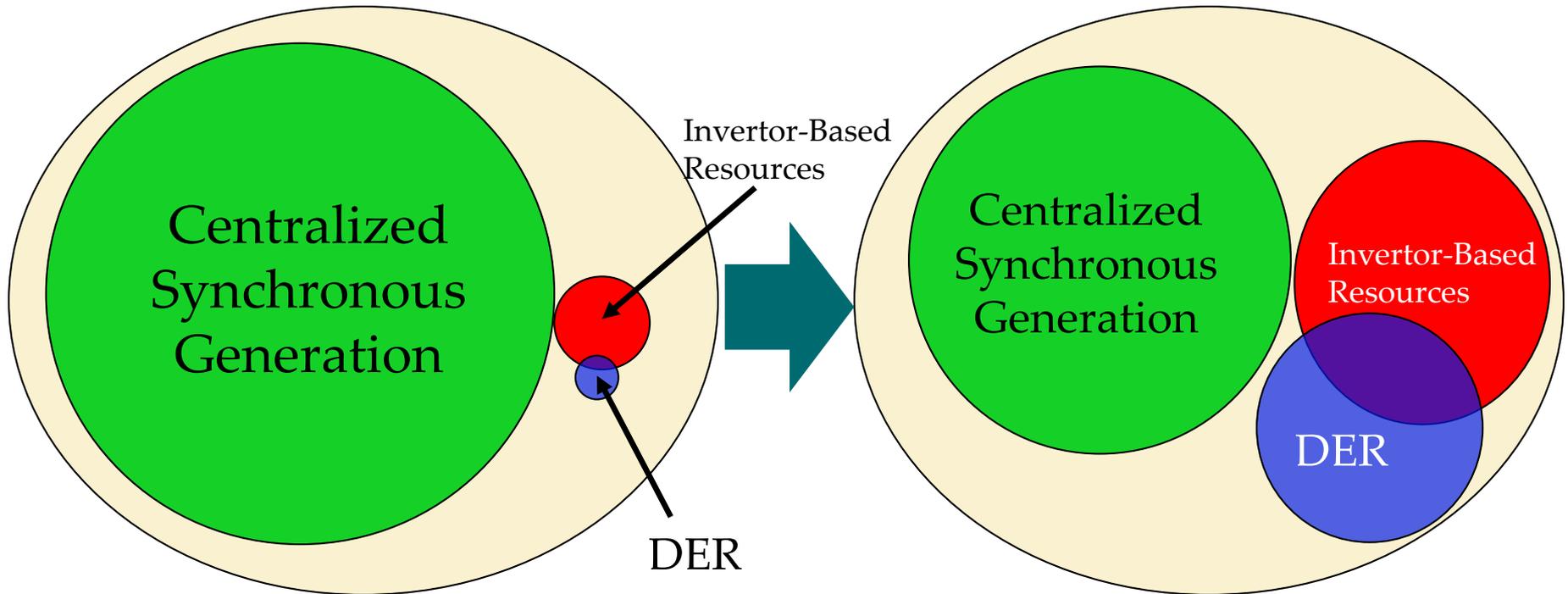


- App 4.2 requirements are tailored more towards traditional synchronous generation
- No specific performance requirements DER units < 10 MW and facilities < 50 MW

*ICG: IESO-controlled Grid

Background

- Technical advancements have shifted the supply mix



- IESO's 2019 Operability Assessment assessed the shift in supply mix and identified risks to the ICG reliability
 - E.g., inadvertent tripping and momentary cessation during system events

Updates to Appendices 4.2 and 4.3

- Item #1: Consolidation of requirements
- Item #2: Grid support from small distributed energy resources (DER)
- Item #3: Grid support from transmission-connected inverter-based resources
- Item #4: Relaxing requirements for small transmission-connected generating units
- Item #5: Requirement to prevent inadvertent tripping of equipment
- Item #6 : Language clarifications

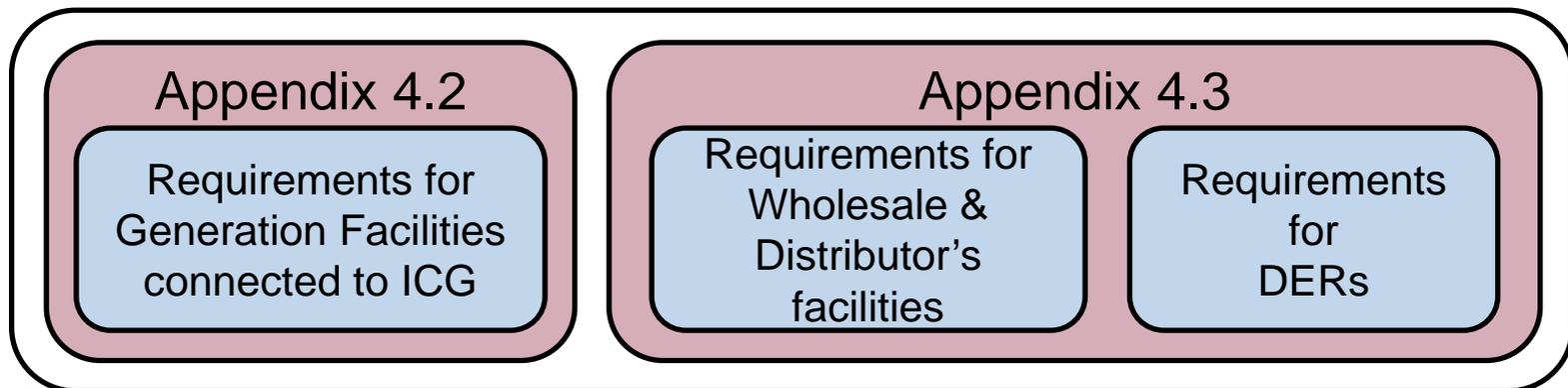
Item #1: Consolidation of requirements

Rationale:

- DER requirements in App. 4.2 are often missed because all other applicable requirements for wholesale customers and distributors are in App 4.3

Proposed Amendment:

- Consolidate requirements by market participant type



Item #2: Grid support from small DER

Rationale:

- The lack of performance requirements for small DERs, combined with their increasing penetration levels, poses a risk to ICG reliability, especially during system disturbances, when a large number of DER could inadvertently disconnect from the grid.

Proposed Amendment:

- Extend the existing DER requirements to all DERs regardless of size to align with CSA 22.3 #9 applicable to distributors
 - Off-nominal frequency operation, Frequency response and Voltage ride-through

Item #3: Grid support from transmission-connected inverter-based resources

Rationale:

- Transmission-connected inverter-based resources behave differently from conventional generation, whereby they can cease to inject current and provide grid support during system disturbances, while still staying connected to the grid

Proposed Amendment:

- Update App. 4.2 to align it with the latest NERC PRC-024 standard and clarify that inverter-based resources must support the grid during and following system disturbances

Item #4: Relaxing requirements for small generating units

Rationale:

- Meeting “Excitation System” and “Power System Stabilizer” requirements is cost prohibitive for small transmission-connected generation and typically poses an insignificant risk to reliability.

Proposed Amendment:

- Remove the applicability of these requirements to smaller generating units by adopting the NERC threshold for Bulk Electric System (BES) generation to determine applicability

Item #5: Requirement to prevent inadvertent tripping of equipment

Rationale:

- Inadvertent tripping of large loads for out-of-zone faults poses reliability risk

Proposed Amendment:

- Add a requirement in App 4.3 to prevent equipment within a load wholesale customer or distribution facility from inadvertently tripping for out-of-zone faults

Item #6: Language clarifications

- Clarify the language pertaining to performance requirements for voltage regulation and reactive power for all types of generation in Appendix 4.2
 - Clarify how and where voltage shall be regulated and reactive power shall be measured
 - Clarify requirements on voltage/reactive compensation

Implementation

The existing grandfather clause in appendix 4.2 will be updated with a new effective date upon approval. Only facilities authorized to connect after the new effective date will be subject to the revised requirements. Existing facilities shall remain subject to the performance requirements in effect at the time of its authorization to connect to the IESO-controlled grid was granted or agreed to by the market participant and the IESO or until the main elements of the associated system are replaced or substantially modified. In addition, a matching clause is being added to appendix 4.3.

Stakeholder Engagement

- Industry stakeholders were consulted on the proposed amendments as follows: June 2019: Market Operation Spring Awareness Session
 - July 2019: Public webinar delivered at the Energy Storage Advisory Group
 - March 2020: Public webinar titled “Updates to Performance Requirements: Market Rule Appendices 4.2 and 4.3”
 - The comments from the July 2019 webinar were addressed and updates were made to the proposed changes based on stakeholder feedback
 - More than 100 participants attended this webinar and many engaged in discussion
 - Written feedback received following the webinar was supportive; specific comments will be addressed in the next redline of App. 4.2/4.3

Next Steps

- June 23 – Technical Panel meeting – Review proposed redline of App. 4.2/4.3 and Market Manual updates and vote to post
- August 11 – Technical Panel meeting to review stakeholder feedback and recommend to the IESO Board during the August 25th meeting.
- August 25 – IESO Board to review the Technical Panel recommendation and potentially approve the proposed market rule amendments

Questions?



Relevant Information

**IESO's active engagement page regarding the Updates to Performance Requirements:
Market Rule Appendices 4.2 and 4.3**

<http://www.ieso.ca/Sector-Participants/Engagement-Initiatives/Engagements/Updates-to-Performance-Requirements-Market-Rule-Appendices-4-2-and-4-3>

Market Rules Chapter 4 Appendices:

<http://www.ieso.ca/-/media/Files/IESO/Document-Library/Market-Rules-and-Manuals-Library/market-rules/mr-chapter4appx.pdf?la=en>

2019 Operability Assessment:

<http://ieso.ca/Sector-Participants/System-Reliability/Operability-Assessment>

NERC PRC-024-3: Generator Frequency and Voltage Protection:

https://www.nerc.com/pa/Stand/Project%20201804%20Modifications%20to%20PRC0242/2018-04_PRC-024-2_clean_12052019.pdf