Market Rule Amendment Proposal Form

Part 1 – Market Rule Information

Identification No.:	MR-00457-R02
Subject:	Market Renewal Program – Storage Integration
Title:	Market Renewal Program Interim Alignment – Storage Integration
Nature of Proposal:	☒ Alteration ☒ Deletion ☒ Addition
Chapter:	Chapter 2 and Chapter 7
Appendix:	N/A
Sections:	Chapter 2, Section 5.3 Chapter 7, Sections 2.1, 2.2, 2.2D, 2.3, 21.1, 21.2, 21.3, 21.4, 21.5, 21.6, 21.7, 21.8, 22.6, 22.9
Sub-sections proposed for amending:	Various
Current Market Rules Baseline:	September 2022

Part 2 – Proposal History

Version	Reason for Issuing	Version Date
1.0	Draft for Stakeholder Review	September 9, 2022
2.0	Draft following stakeholder feedback period	December 20, 2022
3.0	Draft for Technical Panel Review	February 7, 2023
4.0	Publish for stakeholder review and comment	February 22, 2023
5.0	Submitted for Technical Panel Provisional Vote	April 11, 2023

Approved Amendment Publication Date:

Approved Amendment Effective Date:

Part 3 – Explanation for Proposed Amendment

Summary

The IESO proposes to amend the market rules to integrate electricity storage resources into the Market Renewal Program (MRP).

Background

Please refer to the MRP backgrounder in MR-00450-R00. For further information on the integration of storage into MRP please refer to the December 2021 Stakeholder Update on Navigating Design Solutions.

Discussion

The amendments proposed below integrate electricity storage into the provisionally approved market rules for the Market Entry and Prudentials and the Market Power Mitigation batches. Other amendments replace the defined term 'electricity storage facility' with the defined term 'electricity storage resource', where appropriate, similar to references to 'generation resources'. The Storage Interim Design Phase II will integrate the modifications required in Chapter 7, section 21, to support market renewal. These modifications include;

- Integrating the new defined term electricity storage resources;
- Relocating requirements that are procedural in nature from the market rules to Market Manual 1.5 – Market Registration Procedures: Section 3.5 Registration of Facilities, Equipment, and Resources for Electricity Storage Participants. Proposed market rule sections 21.2.1, 21.2.3, and 21.3.1 contain an explicit cross reference to this 'applicable market manual';
- Removing sections related to the Day Ahead Commitment Process and Congestion Management Settlement Credits that will not be relevant in the post MRP market and re-numbering subsequent sections where required.

The accompanying Summary of Changes document prepared for the Interim Alignment batch provides an explanation for each of the amendments proposed below.

Proposal MR-00451-R00; Facility Registration

Chapter 7

2. Registration for Physical Operations in the Day-Ahead and Real-Time Market

2.1 Requirements for Operating on the Grid

2.1.1 No person shall conduct *physical transactions* in the *day-ahead market* or in the *real-time market* or cause or permit electricity or any *physical service* to be conveyed into, through or out of the *integrated power system* unless:

2.1.1.6[1] that person has designated the *market control entity for physical withholding* in accordance with ~~Appendix 7.8~~section 22.9 for each of its *resources* that is a *dispatchable generation resource*, *dispatchable electricity storage resource* or a *dispatchable load*.

2.2.6 Where the *facility* sought to be registered is within the *IESO control area*, the information required for registration as a *facility* or as an associated *resource* as the case may be, shall, subject to any lesser requirements that may be *published* by the *IESO* in respect of the information required for registration of a given class or size of *facility* or any associated *resource*, include, but not be limited to:

2.2.6.8[2] for a *resource* that will be subject to the *IESO's dispatch instructions*, certification that the *resource* has a minimum rated *generation capacity*, net of auxiliary requirements, or a minimum *dispatchable load* capacity, of 1 MW, or for an *electricity storage* ~~*facility*~~ *resource* an ability to inject a minimum of 1 MW and withdraw a minimum of 1 MW. Individual *generation units*, *electricity storage units,* or *loads* may be aggregated to meet this minimum capacity requirement if they meet the aggregation requirements of section 2.3; and

[1] Note concurrent amendment proposed for this section in MR-00457-R00
[2] Note concurrent amendment proposed for section 2.2.6.8 in MR-00457-R00

2.2.6D The *IESO* may request, and the *registered market participant* for a *dispatchable generation resource* or a dispatchable *electricity storage* ~~*facility*~~ *resource* shall submit to the *IESO*, the following information:

- start-up time; and
- minimum shut-down time.

2.2.9A Except as the *IESO* may authorize under section 21.3.2, a *market participant* may ~~apply~~ request to register a *facility* and any associated *resources* as a *self-scheduling electricity storage facility* ~~only~~ if ~~it~~:

2.2.9A.1 the *facility* is comprised of individual *electricity storage units* with *electricity storage unit sizes* that collectively add up to ~~has~~ a~~n~~ total *electricity storage facility size* of 1 MW or more but less than 10 MW and meets the condition of section 2.1.3.4; or

2.2.9A.2 the *facility* is a *commissioning electricity storage facility* of any capacity and that is sought to be registered pursuant to section 2.2D.

2.2D Registration of Commissioning Electricity Storage Facilities

2.2D.3 Upon expiry of the registration referred to in section 2.2D.2, a *market participant* shall not participate in the *real-time market*~~s~~ nor cause or permit electricity or any *physical service* to be conveyed into, through or out of the *integrated power system* in respect of a former *commissioning electricity storage facility* unless such former *commissioning electricity storage facility* has been registered as an *electricity storage facility*, other than pursuant to this section 2.2D, in accordance with section 2.2.

2.3 Aggregated Generation Units, Electricity Storage Units, or Loads as Resources[3]

2.3.1 A *market participant* may request to the *IESO* to aggregate several *resources* associated with either *generation units*, *electricity storage units* or *loads* for one or more of the following purposes: (i) participating in the *day-ahead market*; or (ii) delivering or withdrawing one or more *physical services* in the *real-time market*, or the *procurement markets*. Upon *IESO* approval, the

[3] Note concurrent amendments to section 2.3 proposed in MR-00457-R00

aggregated *resources* associated with either *generation units*, *electricity storage units* or *loads* shall, except as specifically stated in the registration information or the *IESO*'s approval of the aggregation, be treated as a single *resource*:

2.3.2 The *IESO* shall approve a request for the aggregation of *resources* associated with either *generation units*, *electricity storage units* or *loads* into a single *resource* unless:

2.3.2.1 the registration information for the *resources* associated with either *generation units*, *electricity storage units* or *loads* proposed to be aggregated fails to satisfy the conditions of section 2.2;

2.3.2.2 the registration information fails to demonstrate one or more of the following in respect of the *resources* associated with either *generation units*, *electricity storage units* or *loads* proposed to be aggregated;

a. that they are all located within the *IESO control area*;

b. subject to section 2.3.2A, that they are all *connected* to the *IESO-controlled grid* at the same *connection point*;

c. that the *resource* is under the operational control of a single *market participant* and that such *market participant* is authorized to submit *dispatch data* for it;

d. that operational communication between each of them and the *IESO* meets all applicable standards and protocols; or

e. that they all have relevant metering systems to be used for *settlements* purposes that satisfy the requirements of Chapter 6; or

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2.3.2A Notwithstanding section 2.3.2.2b, the *IESO* may approve a request for the aggregation of *resources* associated with either *generation units*, *electricity storage units* or *loads* into a single *resource* that are not all *connected* to the *IESO-controlled grid* at the same *connection point*, provided that, in the sole judgement of the *IESO*, they can be represented as a single point of injection or withdrawal without compromising the *reliability* of the *IESO-controlled grid*. Aggregation for the purposes of calculating *transmission service charges* is specified in the then current *Ontario Energy Board* Transmission Rate Order.

Proposal MR-00453-R00; Prudential Security

Chapter 2

5.3 Calculation of Participant Trading Limit, Default Protection Amount and Maximum Net Exposure for Physical Transactions

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Price Bases Used for Determining Minimum Trading Limit and Default Protection Amount

5.3.10A When calculating the *minimum trading limit* and the *default protection amount* for *market participants* other than *energy traders* in sections 5.3.4, 5.3.8 and 5.3.8B respectively, the *IESO* shall establish and use as its price basis the following:

5.3.10A.1[4] for a *market participant* that is associated with a *generation resource, electricity storage resource, dispatchable load*, or *price responsive load,* the greater of (i) the hourly locational marginal price in the *day-ahead market* or (ii) the hourly average locational marginal price in the *real-time market*; or

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Proposal MR-00455-R00; Market Power Mitigation

Chapter 7

22.6.7 If a *market participant* fails to provide the information or supporting documentation required by the *IESO* pursuant to section 22.6.3, the *IESO* may register as the *resource*'s *reference quantity*:

22.6.7.1 the maximum quantity of *operating reserve* that the *resource* is registered to *offer*, if the *resource* is a *dispatchable load* or an *electricity storage resource* that is withdrawing energy, or

22.6.7.2 the sum of the maximum active power capability of all *generation units* or *electricity storage units* associated with the *resource*, for *resources* other than those described in ~~if the *resource* is not~~22.6.7.1~~a *dispatchable load*~~.

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[4] Note concurrent amendment proposed in MR-00457-R00

22.9 Market Control Entities

22.9.2 A *market participant* shall designate one of the persons or entities disclosed pursuant to section 22.9.1 as the *market control entity for physical withholding* for each *dispatchable generation resource*, *dispatchable electricity storage resource* and *dispatchable load resource* owned by the *market participant*, in accordance with sections 22.9.3-22.9.7.

Storage Interim Design Phase II

Chapter 7

21. Electricity Storage in the IESO-Administered Market

21.1 Purpose

21.1.1 This section 21 sets out *market rules* intended to facilitate the near-term inclusion of *electricity storage participants* in the *IESO-administered markets* and the connection of *electricity storage* ~~*facilities*~~ *resources* to the *electricity system*. A number of the provisions of this section would, based on their subject matter, ordinarily be included under different chapters or sections of the *market rules*. However, these provisions have been gathered together here under a single section for convenience of reference and until such time that *electricity storage participants* and *electricity storage* ~~*facilities*~~ *resources* are more fully integrated under these *market rules.*

21.2 Market Registration

~~21.2.1 This section 21.2 applies for the purposes of the market registration process set out in Section 2.2 of this Chapter 7.~~

21.2.1~~2~~ An *electricity storage participant* wishing to register an *electricity storage facility* and its associated *self-scheduling electricity storage resources* shall satisfy the applicable requirements in section 2, as further described in the applicable *market manual*~~as a *self-scheduling electricity storage facility*, shall~~:

~~21.2.2a register all *electricity storage units* associated with that *electricity storage facility* as *self scheduling generation units* to inject electricity;~~

~~21.2.2b register all electricity storage units associated with that same *electricity storage facility* as *non-dispatchable loads* to withdraw electricity; and~~

~~21.2.2c~~ Without limiting the generality of the foregoing, the *electricity storage participant* shall fulfill ~~all other applicable requirements for market registration relating to *self-scheduling generation facilities* and *non-dispatchable loads*, including~~ those requirements set out in Appendix 4.24 of Chapter 4 (IESO Monitoring Requirements: Electricity Storage Facilities) and Appendix 4.25 of Chapter 4 (Monitoring Requirements: Electricity Storage Performance Standards).

21.2.2~~3~~ Subject to the *market rules* governing participation in the *energy* markets and the provision of *ancillary services* to the *IESO,* a *self-scheduling electricity storage* *resource* or its associated *electricity storage units* ~~*facility*~~ may only be registered to participate in the *energy market* and to provide *reactive support service*, *voltage control service*, or *regulation* service or combinations of the foregoing, except that it shall not be registered to both participate in the *energy market* and provide *regulation* service.

21.2.4~~3~~ An *electricity storage participant* wishing to register an *electricity storage facility* and its associated *dispatchable electricity storage resources*, shall satisfy the applicable requirements in section 2 as further described in the applicable *market manual*.~~as a dispatchable *electricity storage facility*, in addition to the requirements for market registration outlined elsewhere in the *market rules* pertaining to the facility types referenced below, shall~~:

~~21.2.4a register all *electricity storage units* associated with that *electricity storage facility* as dispatchable *generation units* to inject electricity;~~

~~21.2.4b register all *electricity storage units* associated with the same *electricity storage facility* as *dispatchable loads* to withdraw electricity; and~~

~~21.2.4c~~ Without limiting the generality of the foregoing, fulfill ~~all other applicable requirements for market registration relating to dispatchable *generation units* and *dispatchable loads*, including~~ those requirements set out in Appendix 4.24 of Chapter 4 (IESO Monitoring Requirements: Electricity Storage Facilities) and Appendix 4.25 of Chapter 4 (Monitoring Requirements: Electricity Storage Performance Standards).

21.2.4~~5~~ Subject to the *market rules* governing participation in the *energy* markets and the provision of *ancillary services* to the *IESO,* a dispatchable *electricity storage* ~~*facility*~~ *resource* may only be registered to allow that *resource* or its associated *electricity storage units* provide *energy*, *operating reserve,*

reactive support service or *voltage control service*, or combinations of the foregoing and may participate in the *capacity auction.*

21.3 Provision of Regulation Service

21.3.1 An *electricity storage participant* wishing to provide *regulation services* must register its *electricity storage* ~~*facility*~~ *resource* as further described in the applicable *market manual* ~~a self-scheduling electricity storage facility as set forth in section 21.2.2, but excluding section 21.2.2b.~~

21.3.2 Notwithstanding section 2.2.9A.1, an *electricity storage participant* may apply to register as a *self-scheduling electricity storage* ~~*facility*~~ *resource* any *electricity storage facility* that has an *electricity storage capacity* greater than 10 MW up to 50 MW in capacity for the purposes of providing *regulation services* only, provided that the *IESO* determines that there are no adverse impacts on the reliable operation of the *IESO-controlled grid*;

21.3.3 An *electricity storage* ~~*facility*~~ *resource* that is registered to provide *regulation services* may not participate in the *energy* market or the *operating reserve* market.

~~21.4 Day-Ahead - Energy Offers and Energy Bids~~

~~21.4.1 In addition to submitting either an *offer* to inject *energy* or a *bid* to withdraw *energy* as part of the day-ahead commitment process, an *electricity storage participant* may also submit both an *offer* to inject *energy* and a *bid* to withdraw *energy* for a single dispatchable *electricity storage unit* for the same *dispatch hour*.~~

~~21.4.2 For each *dispatch hour* in which both *energy offers* and *bids* are submitted in accordance with section 21.4.1, the *electricity storage participant* shall ensure that the lowest price of the *offers* submitted for that *electricity storage unit* to inject *energy* is greater than the highest price of any *bid* for that same *electricity storage unit* to withdraw *energy.*~~

21.~~4~~5 ~~Real Time~~ Energy Offers and Energy Bids

21.~~5~~4.1 Notwithstanding section 3.5.1, an *electricity storage participant* ~~that is registered and wishes to submit *energy offers* or *energy bids* relating to a dispatchable *electricity storage unit*~~ may submit both an *offer* to inject *energy* and a *bid* to withdraw *energy* for ~~that~~ a *dispatchable electricity storage* ~~*unit*~~ *resource* during the same *dispatch hour*.

21.~~5~~4.2 For each *dispatch hour* in which both *energy offers* and *bids* are submitted in accordance with section 21.~~4~~5.1, the *electricity storage participant* shall ensure that the lowest price of the *offers* submitted for that *electricity*

storage ~~unit~~ resource to inject *energy* is greater than the highest price of any *bid* for that same *electricity storage ~~unit~~ resource* to withdraw *energy*.

~~21.5.3 An *electricity storage provider* whose lowest *offer* price for an *electricity storage unit* to inject *energy* in any *dispatch hour* is less than or equal to its highest *bid* price for the same *electricity storage unit* to withdraw *energy* in that same *dispatch hour* is not entitled to congestion management *settlement* credit determined in accordance with section 3.5.2 of Chapter 9 in respect of that *dispatch hour*, and if paid the IESO may recover such inappropriate congestion management *settlement* credit in accordance with section 3.5.6E of Chapter 9~~

21.5~~6~~ Revisions to Dispatch Data

21.~~6~~5.1 Notwithstanding section 3.3.5, the IESO shall approve reduced injections or withdrawal amounts included in revised *dispatch data* from *electricity storage participants* submitted within 2 hours of a given *dispatch hour,* up to a closing time stipulated in the applicable *market manual*, where the *electricity storage participant* determines, acting reasonably that its *electricity storage ~~unit~~ resource* may reach its:

21.~~6~~5.1a. *lower energy limit* in that *dispatch hour*, and will likely prevent the *electricity storage ~~unit~~ resource* from injecting *energy* in accordance with its *offer*; or

21.~~6~~5.1.b *upper energy limit* in that *dispatch hour*, and will likely prevent the *electricity storage ~~unit~~ resource* from withdrawing *energy* in accordance with its *bid*.

21.~~7~~ 6 Operating Reserve

21.~~7~~6.1 An *electricity storage participant* shall not submit an *offer* to provide *operating reserve* from a *dispatchable electricity storage ~~facility~~ resource* in any *dispatch hour* when there is a simultaneous *energy bid* and *energy offer* in the *real-time market* for that *electricity storage resource ~~facility~~* in the same *dispatch hour*.

21.~~7~~6.2 An *electricity storage participant* shall only submit an *offer* to provide *operating reserve* for a *dispatchable electricity storage resource* accompanied by an *offer* to inject *energy* ~~from the electricity storage unit registered as a dispatchable generation unit to represent its injection capabilities pursuant to Section 21.2.2a~~ if:

21.~~7~~6.2.1 The *electricity storage participant* submits an *offer* for the ~~the dispatchable~~ *electricity storage ~~unit~~ resource* to inject *energy* ~~is exclusively *offered* as a dispatchable *generation unit*~~ for the entire

dispatch hour and has not submitted any *bids* for that *electricity storage resource* to withdraw *energy* for that *dispatch hour*;

21.~~7~~6.2.2 The *electricity storage participant* does not submit an *offer* to provide *operating reserve* accompanied by a *bid* to withdraw *energy* ~~the dispatchable *electricity storage unit* registered as a *dispatchable load* shall not *bid* to withdraw *energy* from the *real-time market* nor *offer operating reserve*~~ in the subsequent *dispatch hour*; and

21.~~7~~6.2.3 the *remaining duration of service* at the time stipulated in the applicable *market manual* is greater than or equal to the period of time stipulated in the applicable *market manual.*

21.~~7~~6.3 An *electricity storage participant* shall only submit an *offer* to provide *operating reserve* ~~from~~ for a *dispatchable* ~~the~~ *electricity storage* ~~unit~~ *resource* accompanied by a *bid* to withdraw ~~registered as a *dispatchable load* to represent its withdrawal capabilities pursuant to Section 21.2.2b~~*energy* if:

21.~~7~~6.3.1 The *electricity storage participant* submits a *bid* for the ~~The dispatchable~~ *electricity storage* ~~*unit*~~ *resource* to withdraw *energy* for the entire *dispatch hour* and has not submitted any *offers* for that *electricity storage resource* to inject *energy* ~~is exclusively bid as a *dispatchable load*~~ for ~~the~~ that entire *dispatch hour*;

21.~~7~~6.3.2 The *electricity storage participant* does not submit an *offer* for the ~~dispatchable~~ *electricity storage* ~~*unit*~~ *resource* to inject *energy* into ~~registered as a dispatchable *generator* shall not offer to inject *energy* in~~ the *real-time market* nor an *offer* to provide *operating reserve* in the subsequent *dispatch hour*; and

21.~~7~~6.3.3 The *remaining duration of service* at the time stipulated in the applicable *market manual* is greater than or equal to a period of time stipulated in the applicable *market manual.*

21.~~8~~ 7 Interpretation

21.~~8~~7.1 To the extent of any conflict or inconsistency between the provisions of this section 21 and any other provisions of the *market rules*, the provisions of this section 21 shall govern.

21.~~8~~7.2[5] With respect to Chapter 7, System Operations and Physical Markets-Appendices, the *IESO* will, acting reasonably and consistently at all times with the scope and intent of the amendments referenced in section 21.1:

21.~~8~~7.2a treat electricity storage injecting, or proposing to inject *energy*, as either a ~~dispatchable~~ *dispatchable generation resource* or ~~self-~~

[5] Note concurrent amendment proposed in MR-00457-R01

~~scheduling generation resource~~ *self-scheduling generation resource*; and

21.~~8~~7.2b treat electricity storage withdrawing, or proposing to withdraw *energy*, as either a *dispatchable load* or *non-dispatchable load*, in each case, deeming such changes to be made to the applicable provisions of such Appendices or applicable *market manuals* as may be necessary to give full meaning to the foregoing.

21.~~8~~7.3 [6] For further certainty, the reference in section 21.~~8~~7.2a to the use of *dispatchable generation resource* or *self-scheduling generation resource* ~~dispatchable or self-scheduling generation resources~~ in the interpretation of Chapter 7, System Operations and Physical Markets-Appendices and the applicable *market manuals*, shall not include any features or attributes that pertain primarily to and are distinctive of *intermittent generators, flexible nuclear generators, variable generators,* or *transitional scheduling generators*.

[6] Note concurrent amendment proposed in MR-00457-R03