



Manual 11 Revisions – Hybrid Resource Phase 1 Conforming Changes

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- Section 2.3.3.1 clarified must offer requirement including Hybrid Resources
- Section 4.2.3 included Hybrid Resources to be consistent with updated tables (availability, Offer MW and Offer Price)

- FERC's approval of Docket No. ER22-1420-002 (July, 2022)
 - Classification/categorization of types of Mixed Technology Facilities (1a)
 - Provisions for participating in energy and ancillary service markets (1b)
 - Filed with an effective date of 12/31/9998
 - Other miscellaneous clarifications
- Manual 11 revisions focus on Market Participation Model of Hybrid Resource
 - Open and Closed Loop Hybrid Resources will participate in markets similar to Energy Storage Resource Model Participants
- Implementation date: 6/1/2023 (to-be filed with FERC)

<https://pjm.com/-/media/committees-groups/committees/oc/2022/20220811/item-04---hybrid-resources---presentation.ashx>

- Section 2.1.1 added to Fast-Start Capable Resources
- Section 2.3.3 updated on several sections (offer rules, schedules) on Market Seller as Hybrid Resource
- New Section:
 - 2.3.4 C Mixed Technology Facilities
 - Definitions, Modeling and Classification timing
 - 2.3.4 C.1 Hybrid Resource
 - Phase 1 definition, timing on classification and operation modes

- Section 4.2.1 added reserve service eligibility for Hybrid Resource
- Section 4.2.2 added Hybrid Resource for offer requirement
- Section 4.2.3 updated tables (availability, Offer MW and Offer Price) to include Hybrid Resource

- Section 9.1 added Hybrid Resource to hourly scheduling update



Manual 27 and Manual 28 Revisions – Hybrid Resource Phase 1 Conforming Changes

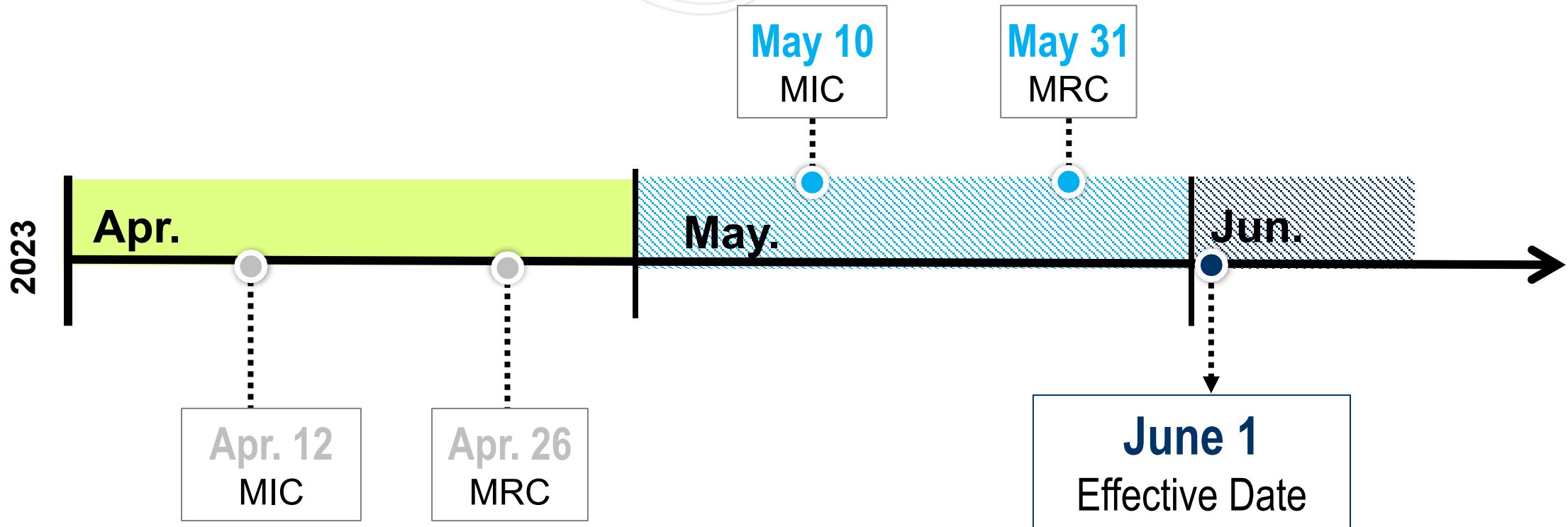
- Section 22.1 of Manual 28 included Hybrid Resources

- Provides Energy Imbalance Service under Schedule 4 of the PJM Tariff. Energy Storage Resource Model Participants or Open-Loop Hybrid Resource shall be considered to be providing Energy Imbalance Service when they are dispatchable by PJM in real time. An Energy Storage Resource or Open-Loop Hybrid Resource |

- Hybrid Phase 1 Tariff and OA changes include:
 - Tariff and OA definitions broadened to cover Open-Loop Hybrid Resources for Direct Charging Energy and Dispatched Charging Energy.
 - Expanded pro forma NITSA in Tariff Attachment F-2 to cover Open-Loop Hybrid Resources.
 - AttK Appendix Sec 1.7.2 and 1.7.2B allows hybrids to buy Direct Charging Energy (and only DCE). Sec 7.4 exempts hybrids from allocation of ARRs.
- This is all consistent with PJM’s Energy Storage Model and FERC Order 841 implementation

- Extend Manual 27 Section 8 and Manual 28 Section 22 to Open-loop Hybrid Resources
 - These sections detail Direct Charging Energy and Dispatched Charging Energy settlements for Energy Storage Resource Model Participants as defined under Order 841 .
 - Requires Energy Storage Resource Model Participants' charging energy to take transmission service under certain circumstances and therefore pays additional non-LMP charges in those circumstances.

Second Reads/ Endorsements



Manual First Reads

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Hybrid Resource Update - MIC



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