Storage As Transmission Asset (SATA) Phase 2 Package Summary

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Operating Committee
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Second Read

- Presented for second read with no revisions since initial review
- Establishes the operational framework for implementing storage as a transmission-only asset

Summary

Overview, Design, Operations, and Value of SATA Phase 2

SATA Phase 2 Framework

SATA Phase 2 deploys energy storage as regulated transmission assets to address localized reliability needs without market participation.

Value Proposition

SATA offers faster, cost-effective alternatives to traditional transmission projects, enhancing grid reliability and reducing costs.

Operational Design

SATA assets operate under PJM's control, mitigating post-contingency violations and ensuring readiness through automatic dispatch and state-of-charge management.

Financial and Policy Structure

Costs recovered via transmission rates with transparent settlements, maintaining clear separation from competitive markets.

Phase 2 Design Components

P2 Design Component 1

#	Design Components[1]	Priority	Status Quo	Package A - PJM/Constellation
*	Implementation			
1	Operation of the SATA	High	None	SATA must mitigate the identified RTEP violation. SATA operating types may include: 1) Pre-contingency response (automatic) 2) Post-contingency response (automatic) 3) Local load security (automatic)

- Operation of SATA will be automatic for identified RTEP violation it was studied to mitigate.

P2 Design Component 2

#	Design Components[1]	Priority	Status Quo	Package A - PJM/Constellation
2	Charge/Discharge of SATA	High	None	PJM establishes timeframes when charge and discharge schedules can be accomodated. Discharge occurs when needed to solve identified RTEP violation. Asset owners responsible for maintaining state of charge and submitting schedules to PJM.

- Discharge occurs to mitigate RTEP violation resource designed to resolve.
- Charge occurs after designed use, coordinated with PJM, asset owner responsible

P2 Design Component 3,4,5

#	Design Components[1]	Priority	Status Quo	Package A - PJM/Constellation
3	Telemetry of SATA	High	None	SATA Telemetry requirements same as ESR
4	Telemetry State of Charge of SATA	High	None	SATA State of Charge requirement same as ESR
5	Metering Requirement of SATA	High	None	POI - Revenue grade meter, ESR - output telemetry standard telmetery scan rate (2-10 seconds)

- Telemetry for SATA will be same as energy storage resources and include state of charge. Metering is revenue grade meter.

P2 Design Component 6,7

#	Design Components[1]	Priority	Status Quo	Package A - PJM/Constellation
6	Voltage Level	High	None	SATA will operate at intended use as per RTEP study.
7	SATA Status	High	None	Battery is offline, available to enable for its intended use of the asset

- Operated at voltage as studied in RTEP
- SATA will be considered offline and available to enable for intended use.

P2 Design Component 8

#	Design Components[1]	Priority	Status Quo	Package A - PJM/Constellation
8	SATA Settlements	High	None	The resource payment and cost allocation for SATA for the Annual Transmission Revenue Requirement will be handled via Schedule 12 billing - Transmission Enhancement Credits. SATA resource will be paid via normal Energy Settlements for energy injections/withdrawals reported via Power Meter. To avoid double compensation, the SATA owner must account for any Energy revenues earned in the formulation of the next year's Annual Transmission Revenue Requirements. SATA resources should be modeled in separate sub-accounts to facilitate accurate accounting of Energy settlements for actual charging/discharging payments.

- Cost of service per Schedule 12 Transmission Enhancement Credits (TEC).
- As resource discharges for intended use, and charges to get ready for next use, settlements calculates amounts, kept in separate sub-account.

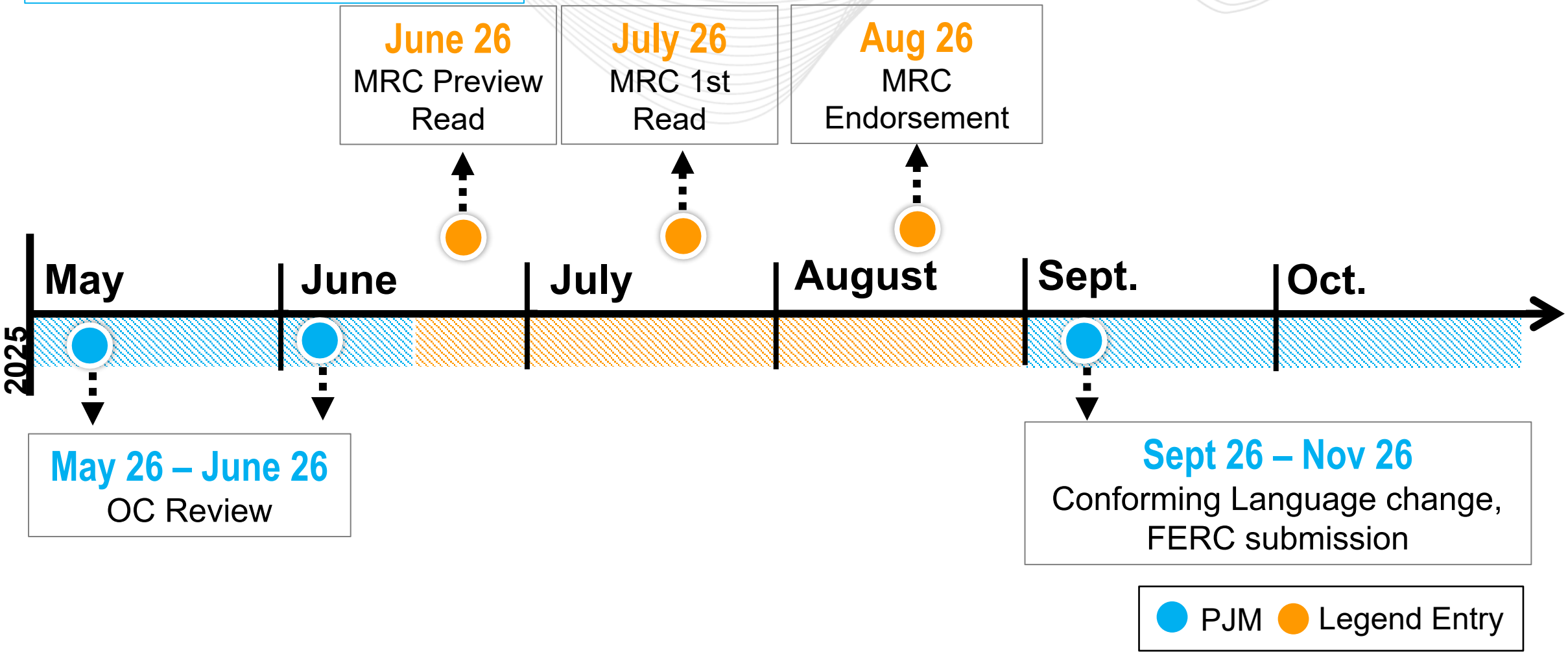
P2 Design Component 9,10

#	Design Components[1]	Priority	Status Quo	Package A - PJM/Constellation
9	Interconnection Queue Entry	High	None	Ineligible to enter the interconnection queue
10	Market Participation	High	None	Ineligible to partipate in PJM markets, SATA is a price taker when operated for intended purpose, energy only resource, no capacity value.

- Not allowed in Queue
- Does not participate in PJM markets, no capacity value

Review/Endorsement Timeline

PJM Highlighted Time Period



Key Takeaways

1	2	3
• Combined Package PJM + Constellation is being brought forward as one package	• OC will review and move Phase 2 to MRC	• MRC will review Phase 1 and Phase 2 combined package

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Storage As Transmission Asset

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Interest Identification and how addressed

	Interests	Addressed:
1	How SATA will be used in Operations	Automated to address RTEP violation, operated for intended use
2	Identify telemetry & metering requirements associated with battery (SATA) operation	No status quo SATA did not exist, same requirements as ESR
3	What will be the operation procedures for deploying the SATA	Automated to address RTEP violation
4	Who is responsible for directing and operating SATA resource	PJM
5	Who is responsible for maintaining asset state of charge	SATA Owner, asset owner
6	Who is reponsible for setting and evaluating the monitoring priority and voltage levels	Transmission owner sets MP (Status quo)
7	Understand the order of operation of deploying SATA	Automated to address RTEP violation
8	What will the requirement be for size and duration of the transmission asset	To be analyzed in planning when presented as wired solution but expectations are small size (less than 10MW's) and duration less than or equal to 4 hours
9	How will SATA be deployed in terms of automation or manually implemented	Automatic
10	Define how SATA gets settled for charging/discharging operation.	Paid as transmission asset, balanced with charge/discharge price taking
11	Consider current black start reliability resource rules	No changes to black start
12	Incorporating consideration of other RTOs/ISOs SATA rules	All RTO's analyzed and incorporated into education and discussions
13	Understand market impacts of PJM's operational rules for SATA	Market impact from operation of SATA similar to wired switching solution
14	Maintaining focus on operational reliability (including clear rules)	Use cases spelled out in for use in operations
15	Ensure there are no conflicts with rules surrounding Blackstart Reliability Backstop process	No impacts
16	Minimize/eliminate impact of SATA on markets	Market impact from operation of SATA similar to wired switching solution