



Next Generation Markets Update

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Market Implementation Committee
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Multi-year partnership between PJM, MISO, ISO-NE and GE started in April 2017

Goals

- Create a substantial improvement in capability and performance
- Enable ISOs to share in costs and system functionality
- Reduce maintenance costs and time-to-market
- Improve system security and quality
- Develop the next generation markets support team at GE and PJM



- nGEM products go through 2 development phases:
 - Product Development – Core product that is common across PJM, MISO, and ISO NE
 - Product Implementation – Customization of the core product to comply with PJM market rules

Product Development

Software products

- Data Transfer Enhancements
- Redesigned Network Applications
- Redesigned Market Clearing Engines
- Redesigned Markets Gateway
- Bidding Service

PJM Product Implementation

Customize and implement

- Data Transfer Enhancements
- Redesigned Network Applications

In 2020, GE released the **data transfer enhancements and network applications software** to PJM. PJM promoted the Day-Ahead and Real-Time network applications functionality as the production system of record in October 2021. Plans are in place to implement this functionality in FTR and RPM in 2023.

GE delivered Project Increment #3 of the **Day-Ahead Market Clearing Engine** to PJM in November 2022. Development of Project Increment #4 is underway and is scheduled for delivery in July 2023. The two final Project Increments are #5, fully integrated system, and #6, Factory Acceptance Testing. These two Project Increments are scheduled for completion in Q4 2023. Production Go Live is dependent on successful completion of Parallel Production Operations.

GE delivered the **Real-Time Market Clearing Engine** Product Development software in December 2021. Requirements development by PJM for the Product Implementation is underway. The current schedule has GE starting development in Q3 2023 with planned delivery estimated to be Q3 2025.

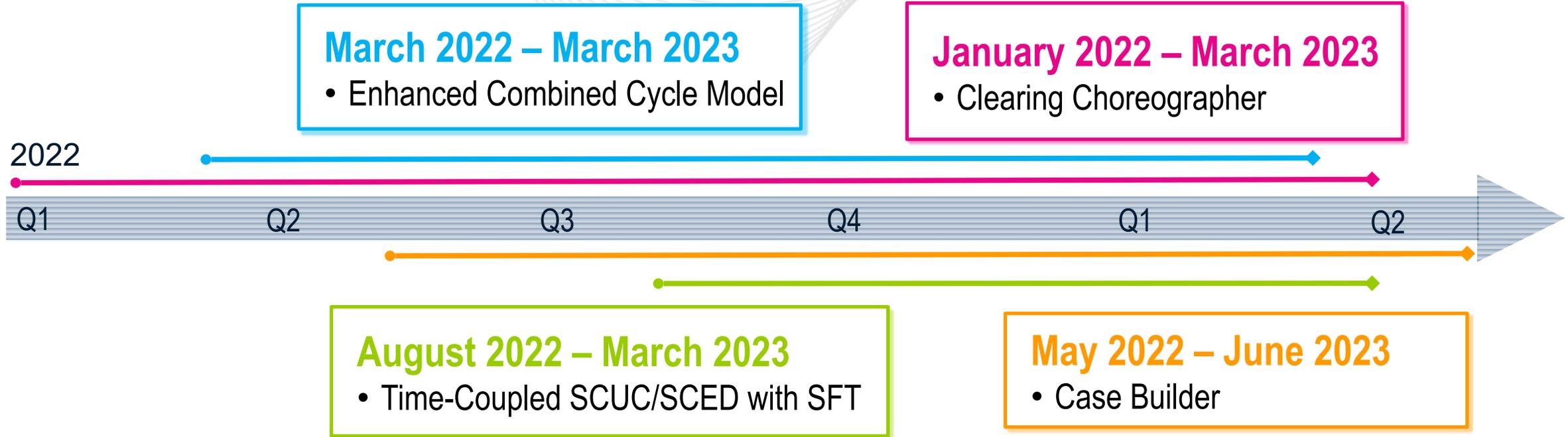
Product Development



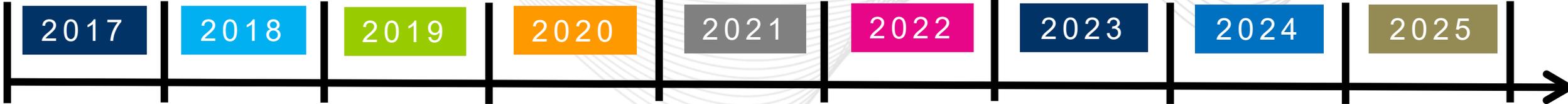
Software products

- Market Clearing Engine User Interface for Market Operators
- Enhanced Combined Cycle Model
- Time-Coupled Security Constrained Unit Commitment (SCUC) and Security Constrained Economic Dispatch (SCED) with Simultaneous Feasibility Test (SFT)
- Clearing Choreographer
- Case Builder

Phase 2 Product Development Timeline



The Market Clearing Engine User Interface for Market Operators was delivered in April 2021.



Phase 1

Product development

Product implementation for Data Transfers and Network Applications in DA and RT

Product implementation for Day-Ahead Market Clearing Engine

Day-Ahead MCE in Production

Phase 2

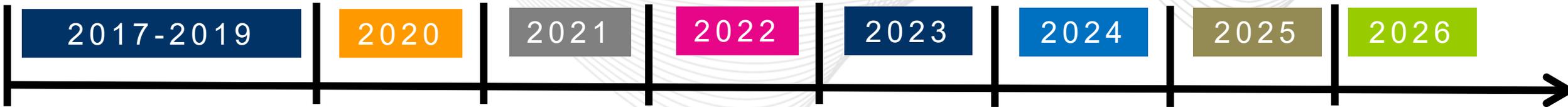
Product development

Product implementation for RT Market Clearing Engines

RT MCE Production



Enhanced Combined Cycle Schedule



DA and RT MCE Product Development

Product implementation for Day-Ahead Market Clearing Engine

DA MCE Parallel Production

ECC Product Development

Product implementation for RT Market Clearing Engine

RT MCE Parallel Production

Product Implementation for ECC integrated into DA and RT MCEs

ECC Go Live

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