

This document has two parts:

PART 1

Frequently Asked Questions About Synchronized Reserve Operation and Deployment

Last updated: Sept. 27, 2023

Q1 How does PJM communicate the request to load Synchronized Reserve committed resources during a Synchronized Reserve Event?

A1 PJM initiates a Synchronized Reserve Event by sending an electronic signal via ICCP or DNP to those that subscribed to receive it. An All-Call to all Market Operation Centers is issued at the same time but with inherent latency. Therefore, those that receive the electronic signal should respond at the time the signal is received and not wait to receive the All-Call message. A subscription to the electronic signal is highly recommended. Please send a request to PJMTelemetrySupport@pjm.com.

Additional [guidance](#) for resources with Synchronized Reserve assignments during Synchronized Reserve Events is available on the Ancillary Services page of PJM.com.

Q2 In what area or zone can PJM issue a request to load a Synchronized Reserve Event?

A2 PJM can issue a Synchronized Reserve Event for the applicable reserve zone or reserve subzone. A Synchronized Reserve Event issued for the RTO automatically includes the subzone. A Synchronized Reserve Event issued for the subzone is meant for only the resources located in the subzone.

Q3 Do I follow my basepoint during Synchronized Reserve Events?

A3 No. For the duration of the Synchronized Reserve Event, resources with a real-time Synchronized Reserve assignment should follow the guidance below:

- i. Generating resource:
 - a. Ignore any incoming SCED basepoint.
 - b. Raise output as soon as possible, without regard to economics, in at least the amount of the real-time Synchronized Reserve megawatt assignment relative to the initial megawatt output at the start of the Synchronized Reserve Event and then maintain output until the event termination.
- ii. Economic Load Response (ELR) resource:
 - a. Drop load as soon as possible in at least the amount of Synchronized Reserve megawatt assignment relative to the initial megawatt consumption at the start of the Synchronized Reserve Event and then maintain the dropped load until the event termination.

Q4 Is my Synchronized Reserve assignment included within my economic basepoint?

A4 SCED will respect the Synchronized Reserve assignment when performing economic dispatch. For example, a 100 MW unit with a 10 MW Synchronized Reserve assignment will not receive an economic basepoint greater than 90 MW.

However, during a Synchronized Reserve Event, the basepoint may not reflect the instruction to load the assigned Synchronized Reserve megawatt. See response to question No. 3 for expected resource response during a Synchronized Reserve Event.

Q5 Should I wait for the All-Call message to load my real-time Synchronized Reserve assignment during a Synchronized Reserve Event?

A5 No. If an electronic signal is received, do not wait for the All-Call to ramp up the applicable generating resource(s) or reduce the applicable Economic Load Response (ELR) resource(s).

- i. Upon receipt of either the All-Call or electronic signal issued for the applicable reserve zone or reserve subzone, resources that are assigned Synchronized Reserve megawatts in real time are obligated to respond as quickly as possible within 10 minutes and without regard to economic signal or SCED basepoint.

Q6 Where can I find my Synchronized Reserve assignment?

A6 PJM communicates Synchronized Reserve assignments consistently in three ways:

- i. The Synchronized Reserve assignment for inflexible Synchronized Reserve resources only (Reserve as Condenser = 1 and inflexible ELR) are posted hourly in Markets Gateway upon ASO case approval – Market Results > RT Synchronized Reserve Award page.
- ii. The Synchronized Reserve assignment for all generating resources (flexible – online generating and inflexible) are posted upon RT SCED case approval in Markets Gateway Dispatch Lambda page.
- iii. The Synchronized Reserve assignment for all generating resources (flexible – online generating and inflexible) that subscribed to ASPIN, an EMS communication element, are sent upon the RT SCED case approval via ICCP. Please send a request to PJMTelemetrySupport@pjm.com to subscribe to ASPIN.

Q7 How do I know which reserve zone or subzone my resource belongs to?

A7 The Demand Response or Generator Hourly Updates page as well as the Reserve Award pages in Markets Gateway lists the reserve zone/subzone (area) to which the resource belongs.

Q8 How is my Synchronized Reserve capability and assignment calculated?

A8 The Synchronized Reserve capability calculation includes various parameters of the resource and may vary with the resource technology type and the operating mode: initial energy output, ramp rate, Economic Minimum, Economic Maximum, Synchronized Reserve Maximum and Condense to Generate Time. See [Manual 11: Energy & Ancillary Services Market Operations](#) for more detail:

- i. Section 4.2.5 describes the Reserve Market resource capability calculation.
- ii. Section 4.4.3 describes the Real-Time Reserve Market clearing.

Q9 What are the circumstances that PJM/IMM will allow the Synch Max limit to be less than the Eco Max limit?

A9 This will be allowed if a physical limitation exists that cannot be addressed using the multi-segmented hourly ramp rate or using the real-time reserve availability communication process as detailed in section 4.2.2.1 of Manual 11: [Communication for Reserve Capability Limitation](#).

Q10 How do I request a Synch Max limit less than the Eco Max limit?

A10 Resource owners should submit requests to Reserves@pjm.com. A copy of this email will be made available automatically to the IMM. The request should include DCS printouts (e.g., PI historian), OEM documentation and/or operational procedures showing the resource's ramp capability across its entire dispatchable range (from Eco Min to Eco Max). PJM and the IMM will review the request and respond with a final determination.

Q11 What do I do if my unit has a physical limitation or transition point that takes longer than 10 minutes?

A11 You may submit a request to Reserves@pjm.com to allow for a Synch Max limit less than the Eco Max limit. The request should include OEM documentation and/or operational procedures showing the resource's limitations and DCS printouts (e.g., PI historian) showing the resource's ramp capability during times specified in the exception request. PJM and the IMM will review the request and respond with a final determination.

You may also model transition points by adjusting the segmented ramp rate for the megawatt points of the transition.

Q12 If my basepoint is sending my unit down but the Synchronized Reserve Event is still in effect, what should I do?

A12 The applicable resources with a Real-Time Synchronized Reserve assignment must ignore the incoming SCED basepoint, but raise output in at least the amount of the real-time Synchronized Reserve megawatt assignment relative to the initial megawatt output at the start of the Synchronized Reserve Event and maintain output until the event termination.

Q13 If I do not have a Synchronized Reserve assignment, but have available Synchronized Reserve megawatts, what should I do during a Synchronized Reserve Event?

A13 A resource that does not have a Synchronized Reserve assignment has no obligation to load the available Synchronized Reserve that it may have. If the resource chooses to load its available Synchronized Reserve, it should follow its economic basepoint immediately upon the event termination.

Q14 How does a Day-Ahead Synchronized Reserve assignment differ from a Real-Time Synchronized Reserve assignment?

A14 The Day-Ahead Synchronized Reserve assignment is a financial obligation only. Only resources with a Real-Time Synchronized Reserve assignment at the time of declaration of a Synchronized Reserve Event have an obligation to physically provide their reserves.

Day-Ahead reserve assignments for inflexible units (i.e., condensers) will be carried over to real-time.

Q15 Which operating parameters impact my Synchronized Reserve assignment?

A15 The applicable operating parameters are described in section 4.2.5 of Manual 11: [Reserve Market Resource Capability](#).

Parameter	Update Available	Markets Gateway Update Location
EcoMax	Must be entered prior to 11 a.m. the day before the operating day	<ul style="list-style-type: none"> Generator > Unit > Detail Demand Response > Hourly Updates
EcoMin	Can be updated anytime to reflect real-time changes	<ul style="list-style-type: none"> Generator > Hourly Updates
Initial Energy Output	No updates available. Based on actual resource output	N/A
Ramp Rates	<p>Default and Daily Ramp Rates must be entered prior to 11 a.m. the day before the operating day.</p> <p>Ramp Rate updates can be made during the operating day 65-minutes prior to the operating hour.</p>	<ul style="list-style-type: none"> Default: Generator > Unit > Detail Daily Ramp Rate: Generator > Unit > Ramp Rates Updates: Generator > Unit > Ramp Rates Updates
Startup Time	Must be entered prior to 11 a.m. the day before the operating day	Generator > Unit > Detail
Notification Time	<p>Must be entered prior to 11 a.m. the day before the operating day</p> <p>Notification Time updates can be made during the operating day 65-minutes prior to the operating hour.</p>	<ul style="list-style-type: none"> Demand Response > Parameters Generator > Unit > Detail Updates: Generator > Schedules > Detail Updates
Condense to Generate Time	Must be entered prior to 11 a.m. the day before the operating day	Generator > Unit > Detail

Q16 Has PJM implemented Intelligent Reserve Deployment (IRD)?

A16 No. Intelligent Reserve Deployment was not approved by FERC and thus has not been implemented at this time.

Q17 What is the penalty for nonperformance during a Synchronized Reserve Event?

A17 The penalty for nonperformance during a Synchronized Reserve Event is described in section 6.3.3 of Manual 28: [Operating Agreement Accounting](#).

PART 2

Frequently Asked Questions About Reserve Price Formation

Last updated: Oct. 14, 2022

Q1 What is Reserve Price Formation (RPF)?

A1 RPF comprises the following changes: (1) The consolidation of Tier 1 and Tier 2 Synchronized Reserves, (2) the alignment of Reserves between the Real-Time and Day-Ahead markets by including in both a 10-minute Reserve and 30-minute Reserve product, and (3) the additional use of flexible subzones instead of a single subzone.

Q2 What is the current status of the RPF FERC Order?

A2 PJM received final approval on Sept. 1, 2022 for implementation on Oct. 1, 2022. Please reference FERC Docket No. EL19-58-000 & ER19-1486-000 & EL19-58-012, EL19-58-014, EL19-58-015 for additional details.

Q3 What PJM applications are impacted by RPF?

A3 Markets Gateway User and XML interfaces, Day-Ahead Synchronized/Non-Synchronized/Secondary Reserve assignments, Data Miner feeds, EMS Secondary Reserve assignments and Market Settlements.

Q4 Where can I find additional information on the RPF design and business rules?

A4 RPF information is located in Manual 11, Section 4. In addition, The Energy Price Formation Task Force (EPSTF) has posted a variety of reference meeting materials on RPF:

- [Manual 11, Section 4: Overview of the PJM Reserve Market](#)
- Energy Price Formation Senior Task Force: meeting notes and materials

Q5 Where can I find the detailed changes to Market Gateway?

A5 The detailed list of changes are found in the [Markets Gateway Reserve Pricing Changes](#).

- Q6** If Synchronous Reserve Tier 1 and Synchronous Reserve Tier 2 are consolidated into a single Synchronized Reserves product, then how will units that previously offered Tier 2 offer it when RPF is live given that the new Synchronized Reserves construct continues to require offers for Energy Storage Resources (ESR) and Hydro?
- A6** Under RPF, PJM will utilize available **energy** parameters for Synchronized Reserves evaluation when determining appropriate clearing. It is important to note that Hydro (run of river and pump storage) and ESR are **still** required to submit Synchronized Reserve offers separately. Those resources that have submitted energy offers **and** are eligible to provide reserves will be considered as offered into the reserve market. Furthermore, Hydro units offered as non-dispatchable (fixed gen or having Eco Min = Eco Max) cannot be assigned to provide reserves despite being able to submit reserve-specific offer parameters (availability, Offer megawatt, Offer Price) in Markets Gateway.
- Q7** Will the RPF Market Gateway Train environment still be operational once RPF goes live?
- A7** RPF was implemented in Production on Oct. 1, 2022, and the new Train environment (marketsgatewayreservetrain.pjm.com) was retired on Nov. 1, 2022. The existing Train environment (marketsgatewaytrain.pjm.com) contains the Reserves changes therefore the environment will match Production.
- Q8** We do not plan to participate in any of the Reserves markets; does this still affect my company?
- A8** You may still be impacted by the Reserves release due to the fact there are several field changes and field/screen retirements as well as field additions to some existing screens. Please carefully review the [Markets Gateway Reserve Pricing Changes](#) document previously referenced in Q5. One of the most noticeable changes is the location of the **date** selection is now moved to the upper right-hand side of the screens.
- Q9** Why is the page for Real-time Non-Synchronized Reserve Awards no longer available?
- A9** Markets Gateway displays only RT reserve awards that are committed at least 30-minutes ahead in the hour-ahead ASO engine, which includes inflexible Synchronized and inflexible Secondary Reserves. Non-Synchronized Reserves, flexible Synchronized Reserves, and flexible Secondary Reserves are committed in the RTSCED engine, and those megawatt commitments are communicated via telemetry/ICCP and the Dispatch Lambda page in Markets Gateway generally every five minutes.

Q10 What are the changes to the new ICCP points for members?

A10 There will be a new ICCP point provided for flexible Secondary Reserve assignments and changes to existing ICCP points.

Changes to Existing Points:

- **ATIER1SR:** an existing data point that communicates Tier 1 Synchronized Reserve megawatts will send out 0 MW only effective Oct. 1, 2022. This data point will eventually be removed.
- **DGPSR:** an existing data point that “looks back” over the prior few intervals to determine how closely a unit is following dispatch, and then incorporates that information into the ultimate determination of where the appropriate dispatch basepoint for the resource should be in the upcoming intervals. In RPF, DGPSR will no longer be used and therefore value will be set to one (1) or 100% for all resources effective Oct. 1, 2022.
- **GENRUNR:** to accommodate the new Secondary Reserve product introduced in RPF, a new GENRUNR with a value of 37 will be added for Condense Secondary. This is for condense capable resources that must be able to flip from condensing mode into generation within ten (10) to thirty (30) minutes following the request from the PJM dispatcher.
- There will be no changes to the following data points: **ASPIN** (Tier 2 Synchronized Reserve) and **NSRSPIN** (Non-Synchronized Reserve). ASPIN will continue to communicate all Synchronized Reserve Tier 2 assignments.

New Data Points

- **ASECRES** is a new data point that will communicate Secondary Reserve megawatt assignment to a resource that has reserve capability that can be fully converted into energy within ten (10) to thirty (30) minutes following the request of the PJM dispatcher. The resource may be online or offline.
 - To subscribe for the ASECRES data point, please email a request to PJMTelemetrySupport@pjm.com for implementation. PJM will process requests in the order received. Pending implementation of ASECRES data point, the same data can be accessed in the Markets Gateway Dispatch Lambda page as “SecR Assignment.”
- **SECRESST** is a new data point that the resource owner will use to communicate to PJM in a situation at the plant where a resource becomes unavailable to provide reserves. This is a status point where a value of 2 or *closed* indicates the resource is available to provide reserves, and a value of 1 or *open* indicates the resource is unavailable to provide reserves. This is a real-time communication enhancement similar to making a phone call to a PJM dispatcher to report a reserve unavailability situation pending making such update in the Markets Gateway portal.

To qualify to subscribe for the SECRESST data point, a resource owner will first need to submit a request by emailing Reserves@pjm.com and provide the unit name, unit ID and technical information about the operational modes, limits, or conditions to support the request. A copy of this email will be made available to the Market Monitoring Unit. PJM will determine, with the advice and input of the Marketing Monitoring Unit, whether the request is approved or denied and provide a written notification to the generation resource owner no later than 60 business days from the date of data submittal supporting the request. If the request is denied, PJM will include in the notice a written explanation for the denial. Additional information on how to submit a request is described in section 4.4.3.1 of Manual 11 that includes RPF language. If the request is approved, the request will be forwarded to PJMTelemetrySupport@pjm.com for implementation.

Q11 Where will additional subzone information be posted?

A11 New screens will be created in the public section of Markets Gateway that display the active subzone in real time. Additionally, a new Data Miner feed will display pnodes associated with the respective subzones.

The ability to use Flexible Reserve Sub-zones is one of the primary changes in Reserve Price Formation. Flexible Reserve Sub-zones allow PJM to predefine multiple reserve subzones based on criteria defined in Manual 11. Only one reserve subzone can be active at any given time. A new subzone will not be created and implemented on the same day. However, the subzone can switch between those on the predefined list on a day-ahead basis and if necessary, intra-day, for rare reliability reasons.

All subzone switching and resource mapping will be communicated via Markets Gateway.

The Mid-Atlantic/Dominion (MAD) subzone will be the default subzone, and the only subzone that will be used at the go-live on Oct. 1, 2022, and for the next few months.

From a Synchronized Reserve activation perspective, future telemetry changes will reflect the RTO and subzone subject to the Synchronized Reserve Event. Subzone activation will be dictated by the active subzone at the time of a Synchronized Reserve Event. Until the change to the telemetry point is made, the voice all-call will inform the resource owner of the reserve subzone to load in response to a Synchronized Reserve Event.

Q12 What is the new name for “Tier 2 SR” and will the “Tier 2 SR” timeline for the clearing process change?

A12 Real-Time Synchronized Reserves will replace what is now called “Tier 2 SR.” The award timeline will not change from the current clearing process for “Tier 2 SR.” See question No. 9 for the current clearing process.

Q13 Will Day-Ahead Secondary Reserve, Synchronous Reserve and Non-Synchronous Reserve have a clearing price in the Day-Ahead Market? If so, where will these prices be published?

A13 DA Synchronized, Non-Synchronized, and Secondary Reserve clearing prices will be posted in a new Data Miner 2 feed, Day-Ahead Ancillary Service LMPs and in Markets Gateway. Please refer to question No. 5 for additional details.

Q14 When will I be able to submit offers for the Oct. 1 go-live date?

A14 You will be able to submit offers up to seven days in advance of the Oct. 1 go-live date for the new Reserve Market. Therefore, you can submit Oct. 1 offers starting at midnight of Sept. 24. Furthermore, in Markets Gateway (on or after Sept. 24) if you were to select the Oct. 1 Market Date, then you would see the new changes and screens pertaining to the new reserve market. Any selected Markets Gateway date that is earlier than Oct. 1 will still show the current/legacy screens.

Q15 When does the VACAR Reserve Sharing agreement end?

A15 Coinciding with RPF go live, effective Oct. 1, 2022, Dominion-Virginia Power will exit the VACAR Reserve Sharing Group. The related data communication between Dominion-Virginia Power and PJM will have values go to zero (0), and eventually removed.

Q16 Was Intelligent Reserve Deployment (IRD) approved prior to RPF go live?

A16 As of September 2022, the IRD changes will not be in effect until further notice as FERC did not approve the proposed changes.

Q17 What is the correct nomenclature for the ancillary products in Data Miner?

A17

Dataminer	Abbreviation	Description
Primary Reserve	NSRMCP	Non-Synchronized Reserve Market Clearing Price
Synchronized Reserve	SRMCP	Synchronized Reserve Market Clearing Price
Thirty-Minutes Reserve	SecRMCP	Secondary Reserve Market Clearing Price