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**MSRS Report Format Documentation**

**Balancing Synchronized Reserve Credits**

**Version 7**

Revision History

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| --- | --- | --- |
| **DATE** | **Revision** | **Description** |
| 10/1/2022 | 1 | Initial Distribution |
| 10/27/2022 | 2 | Column Number for RT LMP Desired MW changed from 3000.35 to 3000.34.  Order of columns adjusted. |
| 11/18/2022 | 3 | Supporting Calculations updated for RT Synch Reserve Capped Self-Scheduled MW, RT Synch Reserve Capped PJM Scheduled MW |
| 12/16/2022 | 4 | Adding column RT Synch Reserve LOC Deviation MW; Updated Supporting Calculations for RT Synch Reserve Opportunity Cost  Updated Summary of Changes and Special Logic with supporting details for RT Synch Reserve LOC Deviation MW |
| 3/19/2024 | 5 | Supporting Calculation updated for RT Synch Reserve Opportunity Cost |
| 8/9/2024 | 6 | Updated Summary of Changes and Special Logic with additional supporting details for RT Synch Reserve LOC Deviation MW |
| 8/26/2024 | 7 | Supporting Calculation updated for Synch Reserve Lost Opportunity Cost Credit to include the application of Applied RT Synch Reserve Shortfall Charge |

# Report

**MSRS** Report Name: Balancing Synchronized Reserve Credits

Report short name for User Interface: Balancing Synchronized Reserve Credits

Download File Name Abbreviation: BalSyncCr

Data Granularity: Sub-Hourly

Frequency: Updated daily

Range Displayed on Report: Start Date through End Date

# Supported Billing Line Items

* Balancing Synchronized Reserve Credit (2360)

# Report Content Summary

This report displays the customer account’s owned resource’s balancing synchronized reserve credit for each interval in which the credit is not equal to zero. The credits in this report do not reflect the customer account’s share of jointly owned resources. All owners will see the full credit assigned to the resources.

# Summary of Changes and Special Logic

* RT Condenser Energy Use will only be populated in real-time intervals where the resource was not scheduled to provide secondary reserve as a condenser in the day-ahead market.
* RT Condenser Startup Cost will represent the additional real-time starts required to provide secondary reserve as a condenser compared to what was scheduled in the day-ahead market.
* Supporting details for Synch Reserve Opportunity Cost Credit Owed and Synch Reserve MRN Offset values can be seen on the Market Revenue Neutrality Offset Details report.
* The calculation of RT Synch Reserve LOC Deviation MW is supported from data and columns not fully contained within this report. To calculate RT Synch Reserve LOC Deviation MW the following can be used:

End Point =

If resource has no DA synchronized reserve MW or DA secondary reserve MW and Total Capped RT secondary reserve MW = 0 then End Point = RT LMP Desired MW

Else End Point = Min(RT LMP Desired MW, RT Synch Reserve Max MW) – Total DA Synch Reserve MW + Max(RT Synch Reserve Max MW – RT LMP Desired MW,0) – Max(Total Capped RT secondary reserve MW, DA secondary reserve MW)

End Point conditions if DA secondary reserve MW or DA synchronized Reserve MW > 0 and RT Synchronized Reserve Max MW > DA Synchronized Reserve Max (increase):

If Total Capped RT Secondary Reserve MW > DA Secondary Reserve MW, then End Point = Min (RT Secondary Reserve Max MW – Total Capped RT secondary reserve MW – Total DA Synch Reserve MW, DA Scheduled Energy MW)

Else End Point = DA Scheduled Energy MW

End Point conditions if DA secondary reserve MW or DA synchronized Reserve MW > 0 and RT Synchronized Reserve Max MW < DA Synchronized Reserve Max (decrease):

If Total Capped RT Secondary Reserve MW > DA Secondary Reserve MW, then End Point = Min (Begin Point defined below + RT Synch Reserve Capped PJM Scheduled MW, DA Scheduled Energy MW)

Else End Point = DA Scheduled Energy MW

End Point conditions if RT Secondary Reserve Max MW > RT Sync Reserve Max MW and Total Capped RT Secondary Reserve MW > 0 :

If no DA synchronized reserve MW or DA secondary reserve and Total Capped RT Secondary Reserve MW > 0, End Point = RT Secondary Reserve Max MW - Total Capped RT Secondary Reserve MW

Else if DA synchronized reserve MW or DA secondary reserve > 0 and Total Capped RT Secondary Reserve MW > Total DA Secondary Reserve MW, then End Point = Min (RT Secondary Reserve Max MW - Total Capped RT Secondary Reserve MW – DA Synchronized Reserve MW, DA Scheduled Energy MW)

Else End Point = DA Scheduled Energy MW

The End Point calculated in all conditions above is limited to the RT LMP Desired MW.

Begin Point = Max(Min(RT LMP Desired MW, RT Synch Reserve Max MW) – (RT Synch Reserve Capped PJM Scheduled MW + min(RT LMP Desired MW – RT Synch Reserve Max MW,0)) – Total Capped RT secondary reserve MW , 0)

If RT Secondary Reserve Max MW > RT Sync Reserve Max MW and Total Capped RT Secondary reserve MW > 0, then Total Capped RT secondary reserve MW = Max (Total Capped RT secondary reserve MW – (RT Secondary Reserve Max MW - RT Sync Reserve Max MW),0), Else Total Capped RT secondary reserve MW = Total Capped RT secondary reserve MW

RT Synch Reserve LOC Deviation MW = End Point – Begin Point

# Report Columns

The following columns will appear in the body of the report:

|  |  |  |  |
| --- | --- | --- | --- |
| **Online and CSV Column Name** | **XML Column Name** | **Column Number** | **Data Type** |
| Customer ID | CUSTOMER\_ID | 4000.01 | INTEGER |
| Customer Code | CUSTOMER\_CODE | 4000.02 | VARCHAR2(6) |
| EPT Interval Ending | EPT\_INTERVAL\_ENDING | 4001.40 | VARCHAR2(40)  mm/dd/yyyy HH24:MM format  (Displays first interval of the day as hour 0 minute 05 and last interval of the day as hour 24 minute 00) |
| GMT Interval Ending | GMT\_INTERVAL\_ENDING | 4001.41 | VARCHAR2(40)  mm/dd/yyyy HH24:MM format  (Displays first interval of the day in relation to EPT interval as hour 04 minute 05 or hour 05 minute 05 (EDT/EST depending) and last interval of the day as hour 04 minute 00 of the next day or hour 05 minute 00 of the next day (EDT/EST depending)) |
| Market Resource ID | MRKT\_RESRC\_ID | 4001.16 | NUMBER(15,0) |
| Market Resource Name | MRKT\_RESRC\_NAME | 4001.17 | VARCHAR2(60) |
| Market Resource Type | MRKT\_RESRC\_TYPE | 4001.18 | VARCHAR2(10) |
| Resource Ownership Share | RESRC\_OWN\_SHARE | 4001.19 | NUMBER |
| Subzone | SUBZONE | 4000.34 | VARCHAR2(50) |
| Total DA Synch Reserve MW | TOT\_DA\_SYNC\_MW | 2366.16 | NUMBER |
| DA SRMCP Credit ($) | DA\_SRMCP\_CR | 2366.13 | NUMBER |
| RT Synch Reserve Self-Scheduled MW | RT\_SYNC\_SELF\_MW | 2360.50 | NUMBER |
| RT Synch Reserve PJM Scheduled MW | RT\_SYNC\_SCHED\_MW | 2360.51 | NUMBER |
| RT Synch Reserve PJM Added MW | RT\_SYNC\_ADDED\_MW | 2360.52 | NUMBER |
| RT Synch Reserve Shortfall MW | RT\_SYNC\_SHORTFALL\_MW | 2360.53 | NUMBER |
| RT Settlement Revenue MW | RT\_SET\_REV\_MW | 3003.31 | NUMBER |
| RT Economic Max MW | RT\_ECO\_MAX\_MW | 3003.33 | NUMBER |
| RT Synch Reserve Max MW | RT\_SYNC\_RES\_MAX\_MW | 3003.39 | NUMBER |
| RT Synch Reserve Capped Self-Scheduled MW | RT\_SYNC\_CAP\_SELF\_MW | 2360.54 | NUMBER |
| RT Synch Reserve Capped PJM Scheduled MW | RT\_SYNC\_CAP\_PJM\_MW | 2360.55 | NUMBER |
| RT SRMCP ($/MWh) | RT\_SRMCP | 3000.60 | NUMBER |
| RT LMP ($/MWh) | RT\_LMP | 3000.25 | NUMBER |
| RT LMP Desired MW | RT\_LMP\_DESIRED\_MW | 3000.34 | NUMBER |
| Bal SRMCP Credit ($) | BAL\_SRMCP\_CR | 2360.56 | NUMBER |
| RT Energy Offer Amount ($) | RT\_ENERGY\_OFFER\_AMT | 3001.88 | NUMBER |
| DA Synch Reserve Offer Amount | DA\_SYNC\_OFFER\_AMT | 2366.14 | NUMBER |
| RT Synch Reserve Offer Amount ($) | RT\_SYNC\_OFFER\_AMT | 2360.57 | NUMBER |
| Hydro Spill Indicator | HYDRO\_SPILL\_INDICATOR | 4000.67 | VARCHAR2(2) |
| Hydro Average LMP | HYDRO\_AVG\_LMP | 3003.35 | NUMBER |
| RT Condenser Energy Use (MWh) | RT\_COND\_ENERGY\_MW | 3003.36 | NUMBER |
| RT Condenser Energy Use Cost ($) | RT\_COND\_ENERGY\_COST | 3003.37 | NUMBER |
| RT Condenser Startup Cost ($) | RT\_COND\_STARTUP\_COST | 3003.38 | NUMBER |
| RT Synch Reserve LOC Deviation MW | RT\_SYNC\_LOC\_DEV\_MW | 2360.69 | NUMBER |
| DA Synch Reserve Opportunity Cost ($) | DA\_SYNC\_OPP\_COST | 2366.15 | NUMBER |
| RT Synch Reserve Opportunity Cost ($) | RT\_SYNC\_OPP\_COST | 2360.58 | NUMBER |
| Synch Reserve Opportunity Cost Credit Owed ($) | SYNC\_OPP\_COST\_CR\_OWED | 2360.59 | NUMBER |
| Synch Reserve MRN Offset ($) | SYNC\_MRN\_OFFSET | 2360.60 | NUMBER |
| Synch Reserve Lost Opportunity Cost Credit ($) | SYNC\_LOC\_CR | 2360.61 | NUMBER |
| RT Synch Reserve Shortfall Charge ($) | RT\_SYNC\_RES\_SF\_CH | 2360.62 | NUMBER |
| Version | VERSION | 4000.07 | VARCHAR2(12) |

# Predetermined Subzone values: PJM RTO, PJM Mid Atlantic Dominion (MAD), Non PJM Mid Atlantic Dominion (MAD), PJM Baltimore Pepco Dominion (BPD), Non PJM Baltimore Pepco Dominion (BPD)

# CSV Report Example

See Excel file titled “Balancing Synchronized Reserve Credits CSV Format.csv”

# XML Report Example

See XML file titled “Balancing Synchronized Reserve Credits XML Format.xml”

# Supporting Calculations

RT Synch Reserve Capped Self-Scheduled MW = Min(RT Synch Reserve Self-Scheduled MW , Max(Min(RT Economic Max MW, RT Synch Reserve Max MW) – RT Settlement Revenue MW, 0))

2360.54 = Min(2360.50, Max(Min(3003.33, 3003.39) – 3003.31,0))

RT Synch Reserve Capped PJM Scheduled MW = Min(RT Synch Reserve PJM Scheduled MW + RT Synch Reserve PJM Added MW, Max(Min(RT Economic Max MW, RT Synch Reserve Max MW) – RT Settlement Revenue MW, 0))

2360.55 = Min(2360.51 + 2360.52, Max(Min(3003.33, 3003.39) – 3003.31, 0))

Bal SRMCP Credit = (RT Synch Reserve Capped Self-Scheduled MW + RT Synch Reserve Capped PJM Scheduled MW – DA Synch Reserve MW) \* RT SRMCP / 12

2360.56 = (2360.54 + 2360.55 - 2366.16) \* 3000.60 / 12

RT Synch Reserve Shortfall Charge = RT Synch Reserve Shortfall MW \* RT SRMCP / 12

2360.62 = 2360.53 \* 3000.60 / 12

If RT Synch Reserve Capped PJM Scheduled MW <= DA Synch Reserve MW then RT Synch Reserve Opportunity Cost = 0

Else

For Hydroelectric resources:

If Hydro Spill Indicator = Y then:

RT Synch Reserve Opportunity Cost = Max(RT Synch Reserve Capped PJM Scheduled MW – Total DA Synch Reserve MW) \* RT LMP / 12, 0)

2360.58 = Max(2360.55 – 2366.16) \* 3000.24 / 12 , 0)

If Hydro Spill Indicator = N and Total DA Synch Reserve MW = 0 then:

RT Synch Reserve Opportunity Cost = 0

If Hydro Spill Indicator = N and Total DA Synch Reserve MW > 0 then:

RT Synch Reserve Opportunity Cost = Max(RT LMP – Hydro Average LMP)/12 \* (RT Synch Reserve Capped PJM Scheduled MW – Total DA Synch Reserve MW), 0)

2360.58 = Max(3000.24 – 3003.35) / 12 \* (2360.55 – 2366.16), 0)

For resources operating as synchronous condensers:

RT Synch Reserve Opportunity Cost = RT Condenser Energy Use Cost + RT Condenser Startup Cost

2360.58 = 3003.37 + 3003.38

For all other generation resources:

If RT Synch Reserve Max MW – RT LMP Desired MW >= RT Synch Reserve Capped PJM Scheduled MW then 0

Else

RT Synch Reserve Opportunity Cost = {(RT LMP \* RT Synch Reserve LOC Deviation MW) – RT Energy Offer Amount} / 12

2360.58 = {(3000.24 \* 2360.69) – 3001.88} / 12

For Load Response resources:

RT Synch Reserve Opportunity Cost = 0

Synch Reserve Lost Opportunity Cost Credit = (DA Synch Reserve Offer Amount/12 + RT Synch Reserve Offer Amount + DA Synch Reserve Opportunity Cost/12 + RT Synch Reserve Opportunity Cost) – (DA SRMCP Credit/12 + Bal SRMCP Credit + Synch Reserve Opportunity Cost Credit Owed + Synch Reserve MRN Offset – Applied RT Synch Reserve Shortfall Charge)

If Bal SRMCP Credit > 0, then Applied RT Synch Reserve Shortfall Charge = Min(RT Synch Reserve Shortfall Charge, Bal SRMCP Credit)

2360.61 = (2366.14/12 + 2360.57 + 2366.15/12 + 2360.58) – (2366.13/12 + 2360.56 + 2360.59 + 2360.60 – MIN(2360.62, 2360.56))

If Bal SRMCP Credit <= 0, then Applied RT Synch Reserve Shortfall Charge = 0

2360.61 = (2366.14/12 + 2360.57 + 2366.15/12 + 2360.58) – (2366.13/12 + 2360.56 + 2360.59 + 2360.60)

For use on the Market Revenue Neutrality Increased Revenue Offsets report:

Synch Reserve Cost above DA Revenue = (DA Synch Reserve Opportunity Cost – DA SRMCP Credit) / 12

2360.67 = (2366.15 – 2366.13) / 12