

Member Impacting Project Overview

Settlement Ramp- DVER Dispatch

Version 1.01

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Version Control

Version	Date	Author	Change Description
1.0	10/15/2021	SPP	Initial version
1.1	12/15/2021	SPP	This update includes changes to the Testing Section to include the settlement scenarios.

Executive Summary

This release will include updates to the Settlement Management System (SMS) to include the following Revision Requests:

- RR361 – Ramp Capability Products
- RR441 – Ramp Capability Products Settlements Protocol Corrections
- RR470 – Ramp Capability Products Miscellaneous Settlements Clean-up Items
- RR288 – DVER Dispatch Instructions Rule Clean-up
- RR442 – Desired Dispatch Settlement Definition Alignment

Additionally, the release will include other defect fixes and/or enhancements. In this document the term “members” refers to any and all stakeholders which could include market participants, members, customers, transmission owners, vendors, etc.

Business Impact

Affected?	Services Impacted by Changes
X	Eastern Interconnection (Integrated Marketplace)
	Western Reliability Coordination
	Western Energy Imbalance Services Market

RR361 – Ramp Capability Products

SPP is introducing Ramp capability products (ramp-up and ramp-down) to the Integrated Marketplace. The procurement of Ramp product in Market will systematically pre-position resources with ramp capability to manage net load variations and uncertainties. For additional information on changes to the Markets system, see the [Markets Release 2.6 MIPO](#) located in the CUF Markets Release 2.6 folder on spp.org;

The addition of the Ramping Capability product will result in:

- Reduced system scarcity of traditional reserves (Regulation and Contingency), and thus reduced price spikes
- More transparent pricing and payment of flexibility needs
- More efficient operation of Transmission System with less reliance on short-term/manual commitments for uncertainty
- Increased flexibility to resolve multiple constraints (including transmission constraints/flowgates)

Settlement changes to support Ramp Capability Products include new bill determinants, new charge types, and changes to public reports.

RR441 – Ramp Capability Products Settlements Protocol Corrections

During development of the market design for RR361 (Ramp Capability Products), SPP settlements staff discovered clean-up items needed in order to accurately implement the Ramp Product design. The changes presented in this RR are as follows:

- Section 4.5.8.28 (Day-Ahead Combined Interested Resource Adjustment Amount) – The variable `EqrDaRampDnCirHrlyPrca,s,h` is missing the “Da” in the variable to specify this variable is for Day-Ahead. This RR adds in the missing Da.

- Section 4.5.8.29 (Day-Ahead Ramp Capability Up Amount) – The variable DaRampUpAoAmt_{a, m, d} is missing “Ao”. This variable is used for calculating the daily amount for each Market Participant, summed up from Asset Owner amounts. This RR adds in the missing Ao.
- Section 4.5.8.30 (Day-Ahead Ramp Capability Down Amount) – The variable DaRampDnAoAmt_{a, m, d} is missing “Ao”. This variable is used for calculating the daily amount for each Market Participant, summed up from Asset Owner amounts. This RR adds in the missing Ao.
- Section 4.5.8.31 (Day-Ahead Ramp Capability Up Distribution Amount) – The variable DARampUpDistDlyAmt_{a, z, d} incorrectly capitalizes the A in “DA”. This RR lowercases the “a”.
- Section 4.5.8.32 (Day-Ahead Ramp Capability Down Distribution Amount) – The variable DARampDnDistDlyAmt_{a, z, d} incorrectly capitalizes the A in “DA”. This RR lowercases the “a”.
- Section 4.5.9.9 (Real-Time Out-of-Merit Amount) – This RR deletes out language in this section, specific to Deselect Flags for Ramp Products, because Deselect Flags will not exist for Ramp Products.

RR470 – Ramp Capability Products Miscellaneous Settlements Clean-up Items

During the development for RR361 (Ramp Capability Products), additional settlements protocol corrections were discovered. They are as follows:

- 4.5.9.35 Real-Time Ramp Capability Non-Performance Amount – There is an erroneous “minus” located at the end of the sentence in (1) (b).
- 4.5.12 Revenue Neutrality Uplift Distribution Amount – In the calculation for Real-Time Revenue Inadequacy Amount (RtRevInadqcSppAmt), the following two variables incorrectly use “5min” and “Hrly”:
 - Incorrect: RtRampNonPerf5minAmt – Correct: RtRampNonPerfMpAmt
 - Incorrect: RtRampNonPerfDistHrlyAmt – Correct: RtRampNonPerfDistMpAmt

This RR ensures RR361 (Ramp Capability Products) and RR441 (Ramp Capability Products Settlements Protocol Corrections) are accurately implemented.

RR288 – DVER Dispatch Instruction Rules Clean-up

When this functionality is enabled in the Integrated Marketplace, DVERs will have the ability to utilize control statuses as appropriate and dispatch instructions will be calculated accordingly. The settlement specific changes associated with this RR are included in RR442.

RR442 – Desired Dispatch Settlement Definition Alignment

RR288 (DVER Dispatch Instruction Rules Clean-up) changed the definition of Desired Energy for Dispatchable Variable Energy Resources (DVERs) resulting in the need to update language to remain consistent with the definition. It was also necessary to update the settlements definitions for the following determinants that were not captured in RR288: RtDesiredEn5minQty, RtDispDesiredEn5minQty, and RtOomDesiredEn5minQty. Also, a new input to settlements for Real-Time Capability quantity is required to correctly calculate Desired Energy based on the new definition.

Settlement Defect Fixes and Enhancements

ID	Summary	Comments	IM/WEIS
ITSETL-6131	BSS UI/API should enforce schema validation	<p>The BSS UI is allowing members to submit contract names that are not supported by the API XSD for BSS and Notifications. This issue does not prevent SMS from consuming and using the data, but it does prevent the user from being able to receive notifications for this contract as well as use the BSS API to approve/update this contract.</p> <p>Participants utilizing an API to search BSS contracts (e.g. SearchContracts or SearchContractsByDateRange), should verify these API calls work as expected.</p>	IM
ITSETL-3796	Change notification client service name from NotificationConsumingService to NotificationConsumingService_v4 in WSDL.	<p>This change is to follow the pattern used on other notifications like EnergyNotifyService or ReserveNotifyService</p> <p>Participants utilizing the SPP Notification web service to receive event notifications, should verify successful receipt of a notification.</p>	IM

Users Impacted

Members who participate in the Integrated Marketplace.

Business Functions Impacted

- BSS UI/API
 - Ramp Capability Products will added to the product selection dropdown
- EQR data UI/API
- External notifications
 - BilateralHeaderContractEnded (MP, AO)
 - BilateralHeaderPendingApproval (MP, AO)
 - BilateralHeaderStatusChange (MP, AO)
 - BilateralProfileAutoApproved (MP, AO)
 - BilateralProfilePendingApproval (MP, AO)
 - BilateralProfileStatusChanged (MP, AO)
- Public Data
 - Operating Reserve Cost Allocation
 - Ramp Capability Products will be added in a new tab to this report
- FERC formatted EQR UI/API
 - EQR NEW Product Codes for Ramp Capability Products:

Product Code	Source Product Code	Source Product Name	FERC Product Name	Units	Frequency	Peak
DARPU	EqrDaRampUpHrlyQty & Prc	Day-Ahead Ramp Capability Up	Other*	\$/MWH	H	P or OP
DARPD	EqrDaRampDnHrlyQty & Prc	Day-Ahead Ramp Capability Down	Other*	\$/MWH	H	P or OP
RTRPU	EqrRtRampUp5minQty & Prc	Real-Time Ramp Capability Up	Other*	\$/MWH	5	P or OP
RTRPD	EqrRtRampDn5minQty & Prc	Real-Time Ramp Capability Down	Other*	\$/MWH	5	P or OP

Per FERC’s request, until there is a “Ramping” product name in the Electric Quarterly Report Data Dictionary, Appendix A, submitters are to report these new Ramp Capability products under the product name “Other” with a description of what is being reported (Ramp Capability Up/Down) in the Rate Description Field (Field Number 37). SPP does not provide Field 37 so Market Participants will be required to input this information in Field 37 before submission to FERC.

Technical Impact

Members will need to update APIs based on specs published prior to Member Testing.

- Data Exchange Validation Guide
- Technical Specifications Guide
- Public Data Guide

SPP Systems/Processes Impacted

- BSS UI/API
- Notifications API

Anticipated Member Systems/Processes Impacted

- BSS API
- Notifications API
- Public Data
 - Operating Reserve Cost Allocation
 - Ramp products will be added in a new tab to this report
- FERC Formatted Report

Web Services Effective/Retirement Dates

BSS and Notifications Web Services only contain minor version changes; therefore, both Web Services will be upgraded in place and not require the current major version to be retired.

Effective Dates per environment:

- MTE – 12/16/2021
- PROD – 2/24/2022

Member Requirements

Members should update their API.

Testing

Member testing for this project will occur for six weeks in the MTE (Member Test Environment) and include operating dates January 5th through February 15th. Market Participants should submit/update data (bids/offers for markets, meter/bilateral schedules for settlements) in order to test specific scenarios and generate new Ramp Capability Product settlement values. If Market Participants don't submit meter data during member testing, settlements will use state estimator date for meter values.

Settlement reports will be posted for settlements dates January 12th through February 22nd. An accelerated calendar will be used in MTE. Settlement Statements begin posting with S7s on January 12th. S53s will be added beginning 21 days later on January 26th, and S120s will be added 35 days after that on February 9th:

- S7 will post 7 days after the operating date
- S53 will post 21 days after the operating date (*accelerated*)
- S120 will post 35 days after the operating date (*accelerated*)

As a result of the accelerated calendar, BSS and Meter Data due dates are also shifted up for the S53 and S120. All due dates are listed on the settlement calendar posted to the MTE Portal.

Market invoices will be posted weekly starting on 1/20/2022 and continuing through 2/24/2022.

For complete details on member submission due dates and settlement posting dates, a MTE Market Settlement Calendar for this release is available on the MTE Portal in both Excel and PDF formats here: <https://marketplace-mte.itespp.org/pages/settlement-calendars>.

Testing Assumptions:

- All MPs should have already conducted connectivity testing to the appropriate Integrated Test Environment, Member Test Environment (MTE). This project timeline will not include connectivity testing.
- MP staff who are participating in the testing are trained on the systems they are testing.

Settlement Test Cases

SPP has provided test cases to aid the Market Participant in testing the changes to the BSS UI/API, Notifications, Reports and Public Data. These test cases are posted in the project folder.

Ramp Capability testing at a minimum should include the following if applicable to MP/AO:

- Submit/update markets data (bids/offers) for all resource asset types
- Submit meter data for settlements, otherwise state estimator will be used
- Submit/Process bilateral settlement schedules via API/UI for new Ramp Products (RAMPUPUBL, RAMPDNOBL)
 - If registered for Bilateral Settlement Schedule notifications, verify notifications are received for the following when applied to new Ramp Products(RAMPUPUBL/RAMPDNOBL):
BilateralHeaderContractEnded, BilateralHeaderPendingApproval,

BilateralHeaderStatusChange, BilateralProfileAutoApproved, BilateralProfilePendingApproval, BilateralProfileStatusChanged

- View/download MP statements via API/UI and validate/shadow new Ramp Capability Product Charge Types are included and accurate.
- View/download AO Daily Determinant Report and AO Statement via API/UI and validate/shadow new Ramp Capability Product determinants are included and accurate.
- View/download an EQR report via the API/UI and validate new Ramp Capability Products are included and accurate.
- View/download a FERC EQR Report via the API/UI and validate new Ramp Capability Products are included and accurate.
 - For those entities that are part of a CIR share, verify/shadow the amount calculated for each share are accurate.
- View/download Market Public Report – Operating Reserve Cost Allocation and verify the new Ramp Capability Products are included on the Legends tab and on the Hourly history 4 tab of the report.
- Most of the expected Settlement Values will be created automatically if market bids and offers are submitted as requested, however the following specific scenarios should also be completed and may/will require intervention from SPP to get the desired outcome:
 - OOME
 - DA and RUC MWP for MCRs and Non-MCRs Repricing
 - Ramp Non-performance

Desired Dispatch testing at a minimum should include the following if applicable to MP/AO:

- Submit/update markets data (bids/offers) for asset type DVER that are online
- Submit meter data for settlements, otherwise state estimator will be used

Settlement Scenarios

The following scenarios have been identified for testing changes associated with RR361 Ramp Products:

- Unstructured / Base Settlement Calculations
 - Base Settlement Calculations include:
 - Day Ahead Market clearing Ramp Up and Ramp Dn products
 - RUC Market clearing/commitments Ramp Up and Ramp Dn products
 - CIR resources with Day Ahead Market clearing Ramp Up and Ramp Dn products
 - CIR resources with RUC clearing/commitments Ramp Up and Ramp Dn products
- Day Ahead MWP Calculations
 - MCR Transition
 - Generators
- Out-of-Merit Energy Calculations
- Re-pricing Ramp Up and Ramp Dn products

The following scenarios have been identified for testing changes associated with RR288 DVER Dispatch clean-up:

- Unstructured / Base Settlement Calculations
- Out-of-Merit Energy Calculations

- DVER Day Ahead Market commitment that is in manual status in Real-Time

Settlement Scenario Calendar View

JANUARY

S	M	T	W	T	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

FEBRUARY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15				

First OD: 01/05/22 (posts on 1/12/22)
 Last OD: 02/15/22 (posts on 2/22/22)

Scenario	Date
Unstructured / Base Settlement Calculations* - Day Ahead Market clearing Ramp Up/Dn products - RUC Market clearing/commitments Ramp Up/Dn products - CIR Resources w/Day Ahead Market clearing Ramp Up/Dn - CIR Resources w/RUC clearing/commitments Ramp Up/Dn	01/05/22 - 01/31/2022
Make Whole Payment Scenarios - Non MCR clear Ramp Up/Dn in DA with DA MKT Commitment - Non MCR clear Ramp Up/Dn in RT with RUC MKT Commitment - MCR transitioning in DA and clearing Ramp Up/Dn in Real-Time - MCR clears Ramp Up/Dn in DA and in RT transitions	01/12/22 - 01/14/22 01/18/22 - 01/20/22 01/25/22 - 01/27/22
Out-of-Merit Energy Scenarios	01/05/22 - 02/15/22
Repricing Scenarios for Ramp Up/Dn Products	1/20/22 and 1/28/22
DVER Scenarios	01/12/22 - 01/14/22 01/18/22 - 01/20/22 01/25/22 - 01/27/22
Scenario Reruns if needed	02/01/22 - 02/15/22

~~Specific Ramp product testing scenarios and execution dates will be added in a later version of this MIPO. A scenario scorecard will be utilized to track scenario progress. Scorecards will be updated and published weekly during member testing.~~

Market participants are responsible for reviewing the results of each scenario to understand the impacts to their organization prior to production implementation. There will be a period of time reserved for any scenario retesting that may be needed. Market participants should notify SPP via RMS of any additional scenario testing desired as soon as possible to ensure it can be completed prior to the end of member testing.

Member Testing Kickoff

The member testing kickoff call for the Ramp Project will be held on Wednesday, January 5th, at 2:00PM Central Time. Registration for the net conference is available on the SPP calendar at the following link: <https://www.spp.org/events/calendar/rr361-ramp-capability-products-rr288-dver-dispatch-instruction-rules-clean-up-member-testing-kick-off-net-conference-20220105/>.

Issue Reporting

For errors or unexpected results during test execution which require SPP support, please provide error steps and details as soon as possible using the "Submit an Inquiry" Quick Pick. To route issues to the project team, select subtype 1 of "Projects / Initiatives" and subtype 2 of "Settlements Ramp Project". SPP asks that participants report issues as soon as possible so they may be resolved in a timely manner. Any issues identified will be listed and tracked in the Known Issue Log posted to the project folder.

Training

Training for the Ramp Capability Product portion of this release will be provided. Specifically, Market Participants can expect a virtual instructor-led training (VILT) course that will provide an overview of the product, its benefits and how ramp capability requirements are calculated. Attendees will also learn how Market Participants qualify for the product as well as how it is cleared, dispatched and settled. Updated public data for the product will also be reviewed.

At the conclusion of this course, learners will be able to:

- Define Ramp Capability Product,
- Identify the benefits of the product,
- Identify how SPP calculates ramp capability requirements,
- Recognize the Market Participant requirements for product eligibility,
- Explain how the market clears and dispatches the product,
- Identify the product settlement impacts,
- And, identify the public data available for the product.

Training for the Ramp Capability Product enhancement will be provided on:

- Wednesday, January 19, 2022, from 2:00 p.m. to 4:00 p.m. CT.
- Thursday, January 27, 2022, from 9:00 a.m. to 11:00 a.m. CT.

Attendees will need to register for this course in the [SPP Learning Center \(LMS\)](#), and subsequent updates to this document will provide a link to the registration there once it is active.

Training Assumptions:

- All member companies will identify personnel to receive project-related training and/or documentation.
- All member companies will use the [SPP Learning Center \(LMS\)](#) to register for any project-related training sessions, if applicable.
- SPP Training will provide learning opportunities that aid understanding, but each entity will be expected to certify performance readiness.

Implementation/Back-out Plan

The release will be backed out and Production will revert back the previous release.

Summary of Timeline

Date	Responsible Party	Action
12/01/2020 – 08/27/2021	SPP	Requirements, Design, Build
10/15/2021	SPP	Publish MIPO
10/15/2021	SPP	Publish Technical Specifications (final)
12/16/2021	SPP / Member	BSS and Notifications Web Service modifications effective in MTE

Date	Responsible Party	Action
01/05/2022	SPP / Member	Member Testing Kickoff Meeting
01/05/2022 – 02/22/2022	SPP / Member	Member Testing in MTE (Member Test Environment) <i>Operating Dates: 01/05/22 – 02/15/22</i>
01/19/2022	SPP / Member	Training for Ramp Capability Product (2:00 p.m. to 4:00 p.m. CT)
01/27/2022	SPP / Member	Training for Ramp Capability Product (9:00 a.m. to 11:00 a.m. CT)
02/24/2022	SPP / Member	BSS and Notifications Web Service modifications effective in PROD
03/01/2022	SPP / Member	Effective date in Production

Project Assumptions

None identified at this time.

Risks

Project risk has been opened due to resource constraint for upstream system.

Additional Documentation

- [Settlements Member Data Exchange \(UI/API\) Validations](#)
 - Provides members with a list of validations the settlement system performs upon submission or query of data. There will be changes to this documentation associated with this project.
- [Settlements Management System API/XML Specifications](#)
 - Updates to the technical specifications are included with this project.
- [Settlements Public Data Guide](#)
 - Provides members with file specifications for settlements public data reports.
- [RR361 Recommendation Report](#)
 - Provides an overview of the SPP Tariff and Integrated Marketplace Protocol changes associated with this revision request.
- [RR441 Recommendation Report](#)
 - Provides an overview of the SPP Tariff and Integrated Marketplace Protocol changes associated with this revision request.
- [RR470 Recommendation Report](#)
 - Provides an overview of the SPP Tariff and Integrated Marketplace Protocol changes associated with this revision request.
- [RR288 Recommendation Report](#)
 - Provides an overview of the SPP Tariff and Integrated Marketplace Protocol changes associated with this revision request.
- [RR442 Recommendation Report](#)

- Provides an overview of the Integrated Marketplace Protocol changes associated with this revision request.

Communication Plan

Communication about the project will be provided via the Change User Forum meetings and updates to the MIPO.

MIPO and Project Documentation

All project information will be posted to the [Settlements Ramp Project](#) folder under Change User Forum Project Documentation on SPP.org.

This MIPO will be updated periodically as new information is available. With any update, a redline version will be posted to the project documentation folder, and the CUF will be notified.

Next Steps

Action	Assignee	Status & Due Date
Members (and vendors) become familiar with all RRs listed above for Ramp Capability Products and Desired Dispatch Settlement definition alignment and determine potential impacts to their process.	Member	Now
Schedule resources to test in <x> timeframe	Member	Now
Identify and implement required system updates, including modifications to shadow settlement systems, to support the changes detailed in the Business Impact and Technical Impact sections.	Member	Now – 01/05/2022
Access and download the settlement results in MTE and perform any shadow settlement processes like you would in production to verify no issues.	Member	01/05/2022 – 02/22/2022

FAQs

Frequently asked questions will be added to the document as identified or necessary.

Question	Answer

More Information

At any time, members can ask questions by completing an RMS ticket: <https://spprms.issuetrak.com/login.asp>. Select the "Submit an Inquiry" [Quick Pick Request Template](#) followed by the Subtype 1 of "Projects / Initiatives". "Settlements Ramp Project" can then be selected for the Subtype 2 field in order to route questions to the project team.

If a new user ID is needed for RMS, click on that link and follow the directions for "Register Now."

Welcome to Southwest Power Pool's Request Management System (RMS)

New Request

- Home
- Dashboard
- Request Hub
- Search Requests
- Unassigned Requests
- Calendar
- Knowledge Base
- Reports
- Closing Requests
- SPP Website

Submit Request

Quick Pick:

Submit Date: mm/dd/yyyy

Time: :

* Class: add

Request Status: add

* Request Type: add

* Subtype 1: add

* Subtype 2: add

Welcome to Southwest Power Pool's Request Management System (RMS)

New Request

- Home
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- Calendar
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- Reports
- Closing Requests
- SPP Website

Submit Request

Request Template:

Submit Date: mm/dd/yyyy

Time: :

* Class: add

Request Status: add

* Request Type: add

* Subtype 1: add

* Subtype 2: add

Bookmarks