Day-Ahead and Real-Time Markets
User Interface
Business Validations

November 15, 2016

IT Applications, Integrated Marketplace
## Revision History

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<td>Nikki Eason</td>
<td>Initial draft for members based on validations provided to vendor (Alstom)</td>
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<td>Nikki Eason</td>
<td>Updated with feedback from SPP Business Owners</td>
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<td>1.0</td>
<td>Nikki Eason</td>
<td>Updated document for publication</td>
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<td>2.0</td>
<td>Nikki Eason /</td>
<td>Updated operating limit validations</td>
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<td></td>
<td>Gary Cate</td>
<td>Added JOU validations for combined resource option</td>
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<td>Updated Regulation/Contingency Reserve ramp rate validations</td>
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<td>Clarified how Market Type should be used to indicate submission is for both DAMKT and RTBM</td>
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<td>Added endnote to clarify how NULL values should be represented in XML</td>
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<td>Added endnote to define Operating Day for the Day-Ahead Market</td>
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<td>Updated applicable run time resource parameter validations with 00:00 instead of zero</td>
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<td>Updated resource offer parameters to match naming convention in the Protocols</td>
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<td>Clarified Operating Day and Operating Hour submission restrictions</td>
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<td>Updated Ramp Rate validations</td>
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<td></td>
<td></td>
<td>Changed all MW validations from &quot;Must be greater than or equal to 0.1MW&quot; to &quot;Must be greater than zero MW&quot;</td>
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<tr>
<td>3.0</td>
<td>Nikki Eason</td>
<td>Clarified which Energy Resource Offer parameters may be submitted as null.</td>
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<td>Renamed Dispatch Status to Energy Dispatch Status or Operating Reserve Dispatch Status</td>
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<td></td>
<td>Added Energy Ramp Rate validations for DVERs</td>
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<tr>
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| 4.0     | Nikki Eason | - Added validation to Maximum Daily Starts parameter  
- Added validation to Maximum Weekly Starts parameter  
- Added offer floor/offer cap validations for Virtual Offers  
- Modified validation for MW value in Virtual Bid and Demand Bid curves  
- Changed Non-Conforming Load Forecast validation for MW value  
- Clarified that DRR load forecast for Resources under the Calculated Resource Production Option. |
| 5.0     | Nikki Eason | - Updated Price Sensitive Demand Bid MW validation  
- Modified Maximum Daily Energy MW validation  
- Updated Maximum Quick Start Resource Limit validation  
- Added in all Operating Reserve Resource Offer sections that Spinning qualified resources may also submit Supplemental resource offers |
| 6.0     | Nikki Eason | - Modified Demand Response Load forecast validation to allow positive and negative MW values  
- Modified Min/Max Economic Capacity Limits validations to reject limits equal to zero (excludes NDVERs/DVERs)  
- Modified Min Operating Capacity Limits validations to include the same rules for NDVERs as DVERs  
- Modified Min/Max Economic Capacity Limits validations to validate against registered Min/Max capacity limits.  
- Modified Turn Around Ramp Rate Factor validations to only allow values between 0.01 and 1.00 |
| 7.0     | Nikki Eason | - The following updates will be implemented in the Markets 1.8 release scheduled for 11/22/2013:  
  - Maximum Quick Start for non-JOUs must be validated against the Maximum Economic Operating Limit  
  - Maximum Quick Start for JOUs must be validated against the registered Maximum Capacity Limit  
  - Operating Reserve Offers must include a NULL FixedMW when the dispatch status is not equal to “FIXED” |
<p>| 8.0     | Nikki Eason | - Modified submittal window for Mid-Term Non-Conforming Load Forecast |</p>
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<tr>
<th>Version</th>
<th>Author</th>
<th>Business Validations</th>
</tr>
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</table>
| 9.0     | Nikki Eason  | • Modified minimum MW allowed for all Maximum Operating Limit parameters  
                  • Documentation improvements (e.g. corrected typos, updated reference documentation versions)  
                  • Clarified format of time based parameters submitted via UI or API  
                  • Removed requirement that each resource offer parameter must be updated with each resource offer submission. The XSD enforces which parameters are optional within the Web service operations.  
                  • Added new validation for Maximum Weekly Starts to require NULL value when Maximum Daily Starts is NULL  
                  • Corrected validation for Minimum Economic Capacity Operating Limit to allow MW greater than or equal to zero  
                  • Added new validation to Maximum Operating Limits to allow zero MW when commitment status = "OUTAGE"  
                  • Added new validation for Maximum Quick Start Response Limit to compare to 10-minute resource capability from zero MW  
                  • Removed validation requiring JOU Share Percentage to be greater than zero  
                  • Removed requirement to submit NULL Min/Max Regulation Limits in the Operating Reserve API operations for resources not registered as Regulation Up (Down) qualified  
                  • Updated Operating Reserve Offer validations  
                  • Added validation to compare Contingency Reserve Ramp Rate Curve to the Maximum Quick Start Resource Limit for offline Supplemental qualified resources  
                  • Removed requirement to submit a NULL Operating Reserve Dispatch Status in the Operating Reserve API operations for resources not registered as qualified for the Operating Reserve product  
| 10.0    | Nikki Eason  | • Separated the Operating Reserve Offer sections to create a section for each product  
                  • Modified On-line Supplemental Offer validation rules.  
                  • Clarified Operating Reserve Dispatch Status rules for Spinning and Supplemental offers.  
| 11.0    | Nikki Eason  | • Modified On-line and Off-line Supplemental Offer validation rules.  
|
12.0 Nikki Eason
- Added Mitigation Resource offers for the next Operating Day will be rejected while the DAMKT is executing.
- Modified Notification Listener Registration validation rules
- Clarified which Price and FixedMW should be submitted for Online Supplemental Offers.
- Added RTBM Resource offers for the next Operating Day will be rejected while DA-RUC takes a snapshot of the Real-Time Resource offers. This validation has been in place in the Markets system since Market Trials, but was not stated in this document.

13.0 Angie Folds
- Added a new validation that when the Regulation-Up Offer is less than zero, the Regulation-Up Mileage Offer must be equal to zero and when the Regulation-Down Offer is less than zero, the Regulation-Down Mileage Offer must be equal to zero.
- Added validation for Regulation Mileage Offer Price Floor
- Added the requirement of Mileage Offer for Spinning Reserve Offers and Supplemental Reserve Offers be submitted as nil.
- Added validation for Regulation Service Offer Cap and Regulation Service Offer Floor
- Added validation that Mileage Offer Price must be submitted as NULL when submitting a Reserve Offer with a Dispatch Status of ‘Not Qualified’
- Added validation that Mileage Price is required when submitting a Reserve Offer with a Dispatch Status of ‘MARKET’ or ‘FIXED’

14.0 Angie Folds
- Updated validation “Must be greater than or equal to Minimum Capacity Operating Limit submitted during the resource Registration process” for Minimum Economic Capacity Operating Limit to only apply to RTBM
- Add validation “May submit zero MW for DVERs and NDVERs” to Maximum Economic Capacity Operating Limit, Maximum Regulation Capacity Operating Limit, Maximum Emergency Capacity Operating Limit and Maximum Normal Capacity Operating Limit

15.0 Angie Folds
- Added MCR to Glossary table
- Update Section 5 title to include non-JOU and non-MCR
- Added Section 9, Energy Resource Offer (MCR)
- Added additional information in regards to MCRs to the Resource Name for Energy Mitigated Resource Offer section
- Added additional information in regards to MCRs to the Resource Name for Operating Reserve Resource Offer (non-EDR) section
- Added additional information in regards to MCRs to the Resource Name for Operating Reserve Mitigated Resource Offer section
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1. Introduction

1.1 Purpose

The purpose of this document is to describe the business validations associated with Market Participant data submissions to the SPP Integrated Marketplace Day-Ahead (DAMKT) and Real-Time Balancing Markets (RTBM) via the Market User Interface (UI) and Markets Web Services (API).

This document, along with the corresponding XSDs, fully describes the validations of the SPP Integrated Marketplace Markets UI and Markets Web Services.

1.2 Supporting Documents

The following table describes the primary supporting documents for the business validations defined in this document.

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<td>Integrated Marketplace Protocols</td>
<td>The Market Protocols developed by SPP provide background information, guidelines, business rules, and processes for the operation and administration of the SPP Integrated Marketplace and the Reliability Unit Commitment processes, including market settlements, billing, and accounting requirements.</td>
<td>Integrated Marketplace-Protocols</td>
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1.3 Glossary

The following acronyms are used by this document.

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<td>DAMKT</td>
<td>Day-Ahead Market</td>
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<td>DDR</td>
<td>Dispatchable Demand Response</td>
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<td>DRL</td>
<td>Demand Response Load</td>
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<td>DRR</td>
<td>Demand Response Resource</td>
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<td>DVER</td>
<td>Dispatchable Variable Energy Resource</td>
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<td>EDR</td>
<td>External Dynamic Resource</td>
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<tr>
<td>GEN</td>
<td>Generator</td>
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<td>Joint Owned Unit</td>
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2. Demand Fixed Bid

The validations defined in this section apply to the submission of Demand Fixed Bid parameters. This section specifically addresses the business rules/validations not enforced in the associated Demand XSD. Please refer to the Demand XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

2.1 Asset Owner Name

- Must be an active Asset Owner in the SPP Markets System

2.2 Location Name

- A Market Participant can only submit Demand Bids for the active registered load Settlement Locations of the Asset Owner

2.3 Operating Hour

- Cannot submit a demand bid for an Operating Hour greater than seven days from current date
- Must be a future Operating Hour
- Must be within the Market submittal timeframe for Day-Ahead – prior to market close

**Note:** The Market submittal timeframe for Day Ahead applies to Demand Bid submissions and deletions.

2.4 Operating Day

- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit demand bid for an OD greater than seven days from current date
- Must be within the Market submittal timeframe for Day-Ahead – prior to market close

**Note:** The Market submittal timeframe for Day Ahead applies to Demand Bid submissions and deletions.

2.5 Demand Bid MW

- MW must be greater than zero MW
3. Demand Price Sensitive Bid

The validations defined in this section apply to the submission of Demand Price Sensitive Bid parameters. This section specifically addresses the business rules/validations not enforced in the associated Demand XSD. Please refer to the Demand XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

3.1 Asset Owner Name

- Must be an active¹ Asset Owner in the SPP Markets System

3.2 Location Name

- A Market Participant can only submit Demand Bids for the active¹ registered load Settlement Locations of the Asset Owner

3.3 Operating Hour

- Must be a future Operating Hour
- Cannot submit a demand bid for an Operating Hour greater than seven days from current date
- Must be within the Market submittal timeframe for Day-Ahead – prior to market close

**Note:** The Market submittal timeframe for Day Ahead applies to Demand Bid submissions and deletions.

3.4 Operating Day²

- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a demand bid for an OD greater than seven days from current date
- Must be within the Market submittal timeframe for Day-Ahead – prior to market close

**Note:** The Market submittal timeframe for Day Ahead applies to Demand Bid submissions and deletions.

3.5 Demand Bid Curve

- Must be submitted with each Demand Price Sensitive Bid
• Must indicate whether or not “SLOPE” is used in the submitted curve
• Must have at least one MW point that is greater than zero
• May include up to 10 MW/$ points
• MW must be greater than zero MW
• Prices must be monotonically non-increasing
• MW must be increasing
4. **Demand Response Load Forecast**

The validations defined in this section apply to the submission of baseline Demand Response Load Forecast parameters for Resources under the Calculated Resource Production Option. This section specifically addresses the business rules/validations not enforced in the associated Energy XSD. Please refer to the Energy XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

4.1 **Asset Owner Name**
- Must be an active Asset Owner in the SPP Markets System

4.2 **Resource Name**
- Must be a Resource name associated with the Asset Owner
- Must be an active Resource in the SPP Markets System
- Resource Asset Type must be equal to “BDR” or “DDR”

4.3 **Baseline Load Forecast Interval**
- Must be submitted by Operating Hour
- Must be submitted at least 30 minutes prior to the Operating Hour
- Must be a future Operating Hour
- Cannot submit forecast data greater than seven days from current date

4.4 **Forecast MW**
- May submit as positive or negative MW including zero
5. Energy Resource Offer (non-EDR, non-JOU, non-MCR)

The validations defined in this section apply to the submission of all Energy Resource Offer parameters for non-EDRs, non-JOUs, and non-MCRs. This section specifically addresses the business rules/validations not enforced in the associated Energy XSD for each Energy Resource Offer parameter. Please refer to the Energy XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

5.1 Asset Owner

- Must be an active Asset Owner in the SPP Markets System

5.2 Resource Name

- Must be a Resource name associated with the Asset Owner
- Must be an active Resource in the SPP Markets System

5.3 Operating Day

- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a Resource Offer for an OD greater than seven days from current date

5.4 Operating Hour

- Must be within the Market submittal timeframe based on Market Type
  - Day-Ahead (DAMKT) – prior to market close
  - Real-Time (RTBM) – at least 30 minutes prior to Operating Hour (OH)

**Important:** The RTBM submittal window for the next Operating Day will be temporarily closed while the DA-RUC study takes a snapshot of the Real-Time Resource offers. The snapshot takes approximately 10 minutes. During the snapshot, RTBM submissions for the next Operating Day will be rejected.

5.5 Market Type

- If MarketType is "DAMKT", the Resource Offer parameters apply to only DAMKT and are subject to validations associated with the DAMKT
- If MarketType is "DAMKT" and any parameter fails a validation for DAMKT, the entire submission will be rejected
- If MarketType is "RTBM", the Resource Offer parameters apply to only RTBM and are subject to validations associated with the RTBM
- If MarketType is "RTBM" and any parameter fails a validation for RTBM, the entire submission will be rejected
- If MarketType is excluded in the XML request, the Resource Offer parameters apply to both DAMKT and RTBM and are subject to validations associated with both markets
- If MarketType is excluded in the XML request and any parameter fails a validation for either DAMKT or RTBM, the entire submission will be rejected

5.6 Start-Up Cost
- Must be non-decreasing from hot, intermediate, and cold
- Must be greater than or equal to zero

5.7 Start-Up Time
- Must be submitted as hour:minute (HR:MI)

5.8 Minimum Run Time
- Minimum Run Time should be less than or equal to Maximum Run Time
- Must be submitted as hour:minute (HR:MI)
- Must be greater than or equal to 00:00
- If Minimum Run Time is submitted as NULL\textsuperscript{ii}, this indicates to the Market System that the unit does not have a minimum Run Time

5.9 Maximum Run Time
- Must be submitted as hour:minute (HR:MI)
- Maximum Run Time should be greater than or equal to the Minimum Run Time
- Must be greater than or equal to 00:00
- If Maximum Run Time is submitted as NULL\textsuperscript{iii}, this indicates to the Market System that the unit has an infinite Run Time
5.10 **Minimum Down Time**
- Must be submitted as hour:minute (HR:MI)
- Must be greater than or equal to 00:00
- If Minimum Down Time is submitted as NULL\[iii\], this indicates to the Market System that the unit does not have a minimum Down Time

5.11 **Minimum Emergency Capacity Run Time**
- Must be submitted as hour:minute (HR:MI)
- Must be greater than or equal to 00:00

5.12 **Maximum Emergency Capacity Run Time**
- Must be submitted as hour:minute (HR:MI)
- Must be greater than or equal to 00:00

5.13 **Hot to Cold Time**
- Must be submitted as hour:minute (HR:MI)
- Must be greater than or equal to the Hot to Intermediate Time
- Must be greater than or equal to 00:00

5.14 **Hot to Intermediate Time**
- Must be submitted as hour:minute (HR:MI)
- Must be less than or equal to the Hot to Cold Time
- Must be greater than or equal to 00:00

5.15 **Maximum Daily Starts**
- Must be greater than or equal to zero
- Must be less than or equal to Maximum Weekly Starts
- If Maximum Daily Starts is submitted as NULL\[ii\], this indicates to the Market System that the unit may be started an infinite number of times in an Operating Day.

5.16 **Maximum Weekly Starts**
- Must be greater than or equal to zero
- Must be greater than or equal to Maximum Daily Starts
- If Maximum Weekly Starts is submitted as NULL\textsuperscript{iii}, this indicates to the Market System that the unit may be started an infinite number of times weekly
- If Maximum Daily Starts is NULL\textsuperscript{iii} then Maximum Weekly Starts must be NULL\textsuperscript{iii}

5.17 \textbf{Maximum Daily Energy}
- Must be greater than zero
- If Maximum Daily Energy is submitted as NULL\textsuperscript{iii}, this indicates to the Market System that the unit does not have a maximum amount of daily energy

5.18 \textbf{Energy Dispatch Status}
- Only allow “Not Qualified” status for DRRs

5.19 \textbf{Commitment Status}
- Participants are not allowed to submit "Not Participating" in RTBM only in DAMKT

5.20 \textbf{Energy Offer Curve}
- Must indicate whether or not “SLOPE” is used when submitting offer curve
- Prices must be monotonically non-decreasing
- MW must be increasing
- Must have at least one MW point that is greater than zero
- May include up to 10 $/MW points
- MW must be greater than zero MW
- Highest $/MW Point cannot exceed Energy Offer Cap = $1000/MWh
- Lowest $/MW Point cannot be less than Energy Offer Floor = Negative $500/MWh

5.21 \textbf{Minimum Economic Capacity Operating Limit}
- Must be less than or equal to the Maximum Economic Capacity Operating Limit
- Must be greater than or equal to the Minimum Normal Capacity Operating Limit
- If Regulation limits exist, must be less than or equal to Minimum Regulation Capacity Operating Limit
- Must be greater than or equal to Minimum Capacity Operating Limit submitted during the resource Registration process for RTBM
- Must be greater than or equal to zero MW
- Must submit zero MW for DVERs and NDVERs

### 5.22 Maximum Economic Capacity Operating Limit
- Must be greater than or equal to the Minimum Economic Capacity Operating Limit
- Must be less than or equal to the Maximum Normal Capacity Operating Limit
- If Regulation limits exist, must be greater than or equal to Maximum Regulation Capacity Operating Limit
- Must be less than or equal to Maximum Capacity Operating Limit submitted during the resource Registration process
- Must be greater than or equal to 0.1 MW
- May submit zero MW for DVERs and NDVERs
- May submit zero MW when Commitment Status = “Outage”

### 5.23 Minimum Regulation Capacity Operating Limit
- A NULL value must be submitted for resources that are registered as “Not Qualified” for the specified product

<table>
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<th>Note:</th>
<th>The above validation only applies to submissions made via the Energy Web Service.</th>
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- A NULL value may be submitted for resources that are registered as “Qualified” for a Regulation product as long as a dispatch status of “Not Qualified” is also submitted for the Operating Hour
- Resource must be Regulation Qualified
- Must be less than or equal to Maximum Regulation Capacity Operating Limit
- Must be greater than or equal to Minimum Economic Capacity Operating Limit
- Must be greater than or equal to zero MW
- Must submit zero MW for DVERs and NDVERs
5.24 Maximum Regulation Capacity Operating Limit

- A NULL value must be submitted for resources that are registered as “Not Qualified” for the specified product

Note: The above validation only applies to submissions made via the Energy Web Service.

- A NULL value may be submitted for resources that are registered as “Qualified” for a Regulation product as long as a dispatch status of “Not Qualified” is also submitted for the Operating Hour.

- Resource must be Regulation Qualified

- Must be less than or equal to Maximum Economic Capacity Operating Limit

- Must be greater than or equal to Minimum Regulation Capacity Operating Limit

- Must be greater than or equal to 0.1 MW

- May submit zero MW for DVERs and NDVERs

- May submit zero MW when Commitment Status = “Outage”

5.25 Minimum Emergency Capacity Operating Limit

- Not required for BDR

- Must be less than or equal to Minimum Normal Capacity Operating Limit

- Must be less than or equal to Maximum Emergency Capacity Operating Limit

- Must be greater than or equal to zero MW

- Must submit zero MW for DVERs and NDVERs

5.26 Maximum Emergency Capacity Operating Limit

- Not required for BDR

- Must be greater than or equal to Maximum Normal Capacity Operating Limit

- Must be greater than or equal to 0.1 MW

- May submit zero MW for DVERs and NDVERs

- May submit zero MW when Commitment Status = “Outage”

5.27 Minimum Normal Capacity Operating Limit

- Not required for BDR
- Must be greater than or equal to Minimum Emergency Capacity Operating Limit
- Must be less than or equal to Minimum Economic Capacity Operating Limit
- Must be greater than or equal to zero
- Must submit zero MW for DVERs and NDVERs

5.28 **Maximum Normal Capacity Operating Limit**
- Not required for BDR
- Must be less than or equal to Maximum Emergency Capacity Operating Limit
- Must be greater than or equal to the Maximum Economic Capacity Operating Limit
- Must be greater than or equal to 0.1 MW
- May submit zero MW for DVERs and NDVERs
- May submit zero MW when Commitment Status = “Outage”

5.29 **Maximum Quick-Start Response Limit**
- May be submitted for Supplemental qualified resource.
- Must be greater than or equal to 0.1 MW
- Must be less than or equal to the Maximum Economic Capacity Operating Limit
- Must be less than or equal to the 10-minute resource capability from zero MW calculated by SPP using the Contingency Reserve Ramp Rate curve submitted by the MP.

5.30 **Turn-Around Ramp Rate Factor**
- Must be between 0.01 and 1.00

5.31 **No-Load Offer**
- Must be greater than or equal to zero

5.32 **Min-to-Off Time**
- Must be submitted as hour:minute (HR:MI)
- Must be greater than 00:00
5.33 **Sync-to-Min Time**

- Must be submitted as hour:minute (HR:MI)
- Must be greater than 00:00

5.34 **Energy Ramp Rate Curve**

- The same MW cannot be used in multiple breakpoint limits
- Must include at least one Breakpoint Limit which includes Ramp Rate Up (Down) and Emergency Ramp Rate Up (Down)
- May include up to 10 Breakpoint Limits
- Normal Ramp Rate must be greater than zero
- Emergency Ramp Rate must be greater than zero
- Emergency Ramp Rate Up must be greater than or equal to Normal Ramp Rate Up
- Emergency Ramp Rate Down must be greater than or equal to Normal Ramp Rate Down
- For DVERs with an Emergency Maximum Capacity Operating Limit of less than 200MW, the maximum ramp rate between MW specified in the Ramp-Rate-Up Curve and Ramp-Rate-Down Curve in the RTBM Resource Offer multiplied by 5 cannot exceed 40MW
- For DVERs with an Emergency Maximum Capacity Operating Limit greater than or equal to 200MW, the maximum ramp rate between MW levels specified in the Ramp-Rate-Up Curve and Ramp-Rate-Down Curve in the RTBM Resource Offer multiplied by 5 cannot exceed 20% of the DVER’s Emergency Maximum Capacity Operating Limit
6. Energy Resource Offer (EDR only)

The validations defined in this section apply to the submission of all Energy Resource Offer parameters for EDRs. This section specifically addresses the business rules/validations not enforced in the associated Energy XSD for each Energy Resource Offer parameter. Please refer to the Energy XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

6.1 Asset Owner

- Must be an active Asset Owner in the SPP Markets System

6.2 Resource Name

- Must be a Resource name associated with the Asset Owner
- Must be an active Resource in the SPP Markets System
- Must be an EDR

6.3 Operating Hour

- Cannot submit a Resource Offer for an Operating Hour greater than seven days from current date
- Must be within the Market submittal timeframe based on Market Type
  - Day-Ahead – prior to market close
  - Real-Time – at least 30 minutes prior to Operating Hour (OH)

**Important:** The RTBM submittal window for the next Operating Day (OD+1) will be temporarily closed while the DA-RUC study takes a snapshot of the Real-Time Resource offers. The snapshot takes approximately 10 minutes. During the snapshot, RTBM submissions for the next Operating Day will be rejected.

6.4 Market Type

- If MarketType is "DAMKT", the Resource Offer parameters apply to only DAMKT and are subject to validations associated with DAMKT
- If MarketType is "DAMKT" and any parameter fails a validation for DAMKT, the entire submission will be rejected
- If MarketType is "RTBM", the Resource Offer parameters apply to only RTBM and are subject to validations associated with RTBM
• If MarketType is "RTBM" and any parameter fails a validation for RTBM, the entire submission will be rejected
• If MarketType is excluded in the XML request, the Resource Offer parameters apply to both DAMKT and RTBM and are subject to validations associated with both markets
• If MarketType is excluded in the XML request and any parameter fails a validation for either DAMKT or RTBM, the entire submission will be rejected

6.5 **Energy Dispatch Status**
• EDRs not associated with a DC Tie must submit “Not Qualified”

6.6 **Commitment Status**
• Participants are not allowed to submit “Not Participating” in RTBM only in DAMKT
• If MarketType is “DAMKT”, only statuses of “Self”, “Not Participating” or “Outage” may be submitted
• If MarketType is “RTBM” or the attribute is excluded in the XML request, only statuses of “Self” or “Outage” may be submitted

6.7 **Energy Offer Curve**
• Must indicate whether or not “SLOPE” is used when submitting offer curve
• Prices must be monotonically non-decreasing
• MW must be increasing
• Must have at least one MW point that is greater than zero
• May include up to 10 $/MW points
• Will only accept NULL\textsuperscript{iii} values if the EDR is not associated with a DC Tie
• MW must be greater than zero MW
• Highest $/MW Point cannot exceed Energy Offer Cap = $1000/MWh
• Lowest $/MW Point cannot be less than Energy Offer Floor = Negative $500/MWh

6.8 **Minimum Economic Capacity Operating Limit**
• Must be less than or equal to the Maximum Economic Capacity Operating Limit
• Must be greater than or equal to Minimum Capacity Operating Limit submitted during the resource Registration process for RTBM
• Negative limits allowed

6.9 Maximum Economic Capacity Operating Limit

• Must be greater than or equal to the Minimum Economic Capacity Operating Limit
• Must be less than or equal to Maximum Capacity Operating Limit submitted during the resource Registration process
• Must be greater than or equal to 0.1 MW
• May submit zero MW for DVERs and NDVERs
• May submit zero MW when Commitment Status = “Outage”

6.10 Energy Ramp Rate Curve

• The same MW cannot be used in multiple breakpoint limits
• Will only accept NULL values if the EDR is not associated with a DC Tie
• Must include at least one Breakpoint Limit which includes Ramp Rate Up (Down) and Emergency Ramp Rate Up (Down)
• May include up to 10 Breakpoint Limits
• Normal Ramp Rate must be greater than zero
• Emergency Ramp Rate must be greater than zero
• Emergency Ramp Rate Up must be greater than or equal to Normal Ramp Rate Up
• Emergency Ramp Rate Down must be greater than or equal to Normal Ramp Rate Down

The validations defined in this section apply to the submission of all Energy JOU Physical Resource Offer parameters submitted by the designated Asset Owner under the Combined JOU Option. This section specifically addresses the business rules/validations not enforced in the associated Energy XSD for each Energy Resource Offer parameter. Please refer to the Energy XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

7.1 Asset Owner

- Must be an active asset owner in the SPP Markets System

7.2 Resource Name

- Must be the resource name associated with the JOU designated Asset Owner
- Must be an active resource in the SPP Markets System

7.3 Operating Day

- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit Resource Offer for an OD greater than seven days from current date

7.4 Operating Hour

- Must be within the Market submittal timeframe based on Market Type
  - Day-Ahead – prior to market close
  - Real-Time – at least 30 minutes prior to Operating Hour (OH)

**Important:** The RTBM submittal window for the next Operating Day (OD+1) will be temporarily closed while the DA-RUC study takes a snapshot of the Real-Time Resource offers. The snapshot takes approximately 10 minutes. During the snapshot, RTBM submissions for the next Operating Day will be rejected.

7.5 Market Type

- If MarketType is "DAMKT", the Resource Offer parameters apply to only DAMKT and are subject to validations associated with DAMKT.
- If MarketType is "DAMKT" and any parameter fails a validation for DAMKT, the entire submission will be rejected.
• If MarketType is "RTBM", the Resource Offer parameters apply to only RTBM and are subject to validations associated with RTBM.

• If MarketType is "RTBM" and any parameter fails a validation for RTBM, the entire submission will be rejected.

• If MarketType is excluded in the XML request, the Resource Offer parameters apply to both DAMKT and RTBM and are subject to validations associated with both markets.

• If MarketType is excluded in the XML request and any parameter fails a validation for either DAMKT or RTBM, the entire submission will be rejected.

7.6 Start-Up Cost

• Must be non-decreasing from hot, intermediate, and cold

• Must be greater than or equal to zero

• Value must represent the Start-Up Cost for the entire Physical JOU Resource

7.7 Start-Up Time

• Must be submitted as hour:minute (HR:MI)

• Value must represent the Start-Up Time for the entire Physical JOU Resource

7.8 Minimum Run Time

• Must be submitted as hour:minute (HR:MI)

• Minimum Run Time should be less than or equal to Maximum Run Time

• Must be greater than or equal to 00:00

• If Minimum Run Time is submitted as NULL, this indicates to the Market System that the unit does not have a minimum Run Time.

• Value must represent the Minimum Run Time for the entire Physical JOU Resource

7.9 Maximum Run Time

• Must be submitted as hour:minute (HR:MI)

• Maximum Run Time should be greater than or equal to the Minimum Run Time

• Must be greater than or equal to 00:00

• If Maximum Run Time is submitted as NULL, this indicates to the Market System that the unit has an infinite Run Time
• Value must represent the Maximum Run Time for the entire Physical JOU Resource

7.10 Minimum Down Time
• Must be submitted as hour:minute (HR:MI)
• Must be greater than or equal to 00:00
• If Maximum Down Time is submitted as NULL, this indicates to the Market System that the unit does not have a minimum Down Time
• Value must represent the Minimum Down Time for the entire Physical JOU Resource

7.11 Hot to Cold Time
• Must be submitted as hour:minute (HR:MI)
• Must be greater than or equal to the Hot to Intermediate Time
• Must be greater than or equal to 00:00.
• Value must represent the Hot to Cold Time for the entire Physical JOU Resource

7.12 Hot to Intermediate Time
• Must be submitted as hour:minute (HR:MI)
• Must be less than or equal to the Hot to Cold Time
• Must be greater than or equal to 00:00
• Value must represent the Hot to Intermediate Time for the entire Physical JOU Resource

7.13 Maximum Daily Starts
• Must be greater than or equal to zero
• Must be less than or equal to Maximum Weekly Starts
• If Maximum Daily Starts is submitted as NULL, this indicates to the Market System that the unit may be started an infinite number of times in an Operating Day
• Value must represent the Maximum Daily Starts for the entire Physical JOU Resource

7.14 Maximum Weekly Starts
• Must be greater than or equal to zero
• Must be greater than or equal to Maximum Daily Starts
• If Maximum Weekly Starts is submitted as NULL, this indicates to the Market System that the unit may be started an infinite number of times weekly
• If Maximum Daily Starts is NULL then Maximum Weekly Starts must be NULL
• Value must represent the Maximum Weekly Starts for the entire Physical JOU Resource

7.15 **Maximum Daily Energy**
• Must be greater than zero
• If Maximum Daily Energy is submitted as NULL, this indicates to the Market System that the unit does not have a maximum amount of daily energy
• Value must represent the Maximum Daily Energy for the entire Physical JOU Resource

7.16 **Min-to-Off Time**
• Must be submitted as hour:minute (HR:MI)
• Must be greater than 00:00
• Value must represent the Min-to-Off Time for the entire Physical JOU Resource

7.17 **Sync-to-Min Time**
• Must be submitted as hour:minute (HR:MI)
• Must be greater than 00:00
• Value must represent the Sync-to-Min Time for the entire Physical JOU Resource

7.18 **No-Load Offer**
• Must be greater than or equal to zero
• Value must represent the No-Load Offer for the entire Physical JOU Resource

7.19 **Maximum Quick-Start Response Limit**
• May be submitted for Supplemental qualified resource.
• Must be greater than or equal to 0.1 MW
• Value must represent the Maximum Quick-Start Resource Limit for the entire Physical JOU Resource
- Must be less than or equal to the Maximum Capacity Operating Limit submitted during the resource Registration process
- This value multiplied by the JOU share’s percent ownership must be less than or equal to the 10-minute resource capability from zero MW, calculated by SPP using the Contingency Reserve Ramp Rate curve submitted by the JOU Share.

7.20 Commitment Status
- Participants are not allowed to submit "Not Participating" in RTBM only in DAMKT
- Value must represent the Commitment Status for the entire Physical JOU Resource

7.21 Share Asset Owner Name
- Must be an active asset owner in the SPP Markets System
- Must be an asset owner associated with the JOU

7.22 Share Percent
- If all of the shares of a JOU are registered as internal to the SPP Market, sum of JOU share percentage must be equal to 100%. If one or more shares are external, then the sum of JOU internal share percentages may be less than 100%.

7.23 Location Name
- Must be a valid Settlement Location in the SPP Markets System
- Must be submitted along with the Share Asset Owner Name and Share Percent for each asset owner
8. Energy JOU Share Resource Offer

The validations defined in this section apply to the submission of all Energy JOU Share Resource Offer parameters submitted by each Asset Owner for its JOU Share Resource. This section specifically addresses the business rules/validations not enforced in the associated Energy XSD for each Energy Resource Offer parameter. Please refer to the Energy XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

8.1 Asset Owner

- Must be an active asset owner in the SPP Markets System

8.2 Resource Name

- Must be the JOU share resource name associated with the physical JOU resource asset.
- Must be an active resource in the SPP Markets System

8.3 Operating Day

- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a Resource Offer for an OD greater than seven days from current date

8.4 Operating Hour

- Must be within the Market submittal timeframe based on Market Type
  - Day-Ahead – prior to market close
  - Real-Time – at least 30 minutes prior to Operating Hour (OH)

**Important:** The RTBM submittal window for the next Operating Day (OD+1) will be temporarily closed while the DA-RUC study takes a snapshot of the Real-Time Resource offers. The snapshot takes approximately 10 minutes. During the snapshot, RTBM submissions for the next Operating Day will be rejected.

8.5 Market Type

- If MarketType is "DAMKT", the Resource Offer parameters apply to only DAMKT and are subject to validations associated with DAMKT
• If MarketType is "DAMKT" and any parameter fails a validation for DAMKT, the entire submission will be rejected
• If MarketType is "RTBM", the Resource Offer parameters apply to only RTBM and are subject to validations associated with RTBM
• If MarketType is "RTBM" and any parameter fails a validation for RTBM, the entire submission will be rejected
• If MarketType is excluded in the XML request, the Resource Offer parameters apply to both DAMKT and RTBM and are subject to validations associated with both markets
• If MarketType is excluded in the XML request and any parameter fails a validation for either DAMKT or RTBM, the entire submission will be rejected

8.6 Minimum Emergency Capacity Run Time
• Must be submitted as hour:minute (HR:MI)
• Must be greater than or equal to 00:00

8.7 Maximum Emergency Capacity Run Time
• Must be submitted as hour:minute (HR:MI)
• Must be greater than or equal to 00:00

8.8 Minimum Economic Capacity Operating Limit
• Must be less than or equal to the Maximum Economic Capacity Operating Limit
• Must be greater than or equal to the Minimum Normal Capacity Operating Limit
• If Regulation limits exist, must be less than or equal to Minimum Regulation Capacity Operating Limit
• Must be greater than or equal to Minimum Capacity Operating Limit submitted during the resource Registration process for RTBM
• Must be greater than or equal to zero
• Must submit zero MW for DVERs and NDVERs

8.9 Maximum Economic Capacity Operating Limit
• Must be greater than or equal to the Minimum Economic Capacity Operating Limit
• Must be less than or equal to the Maximum Normal Capacity Operating Limit
• If Regulation limits exist, must be greater than or equal to Maximum Regulation Capacity Operating Limit
• Must be less than or equal to Maximum Capacity Operating Limit submitted during the resource Registration process
• Must be greater than or equal to 0.1 MW
• May submit zero MW for DVERs and NDVERs
• May submit zero MW when Commitment Status = “Outage”

8.10 Minimum Regulation Capacity Operating Limit
• A NULL value must be submitted for resources that are registered as “Not Qualified” for the specified product

**Note:** The above validation only applies to submissions made via the Energy Web Service.

• A NULL value may be submitted for resources that are registered as “Qualified” for a Regulation product as long as a dispatch status of “Not Qualified” is also submitted for the Operating Hour
• Resource must be Regulation Qualified
• Must be less than or equal to Maximum Regulation Capacity Operating Limit
• Must be greater than or equal to Minimum Economic Capacity Operating Limit
• Must be greater than or equal to zero
• Must submit zero MW for DVERs and NDVERs

8.11 Maximum Regulation Capacity Operating Limit
• A NULL value must be submitted for resources that are registered as “Not Qualified” for the specified product

**Note:** The above validation only applies to submissions made via the Energy Web Service.

• A NULL value may be submitted for resources that are registered as “Qualified” for a Regulation product as long as a dispatch status of “Not Qualified” is also submitted for the Operating Hour
• Resource must be Regulation Qualified
• Must be less than or equal to Maximum Economic Capacity Operating Limit
• Must be greater than or equal to Minimum Regulation Capacity Operating Limit
• Must be greater than or equal to 0.1 MW
• May submit zero MW for DVERs and NDVERs
• May submit zero MW when Commitment Status = “Outage”

8.12 Minimum Emergency Capacity Operating Limit
• Not required for BDR
• Must be less than or equal to Minimum Normal Capacity Operating Limit
• Must submit zero MW for DVERs and NDVERs
• Must be greater than or equal to zero
• Sum of JOU shares internal to SPP multiplied by the Minimum Emergency Capacity Operating Limit must be greater than or equal to the Physical JOU Resource minimum

8.13 Maximum Emergency Capacity Operating Limit
• Not required for BDR
• Must be greater than or equal to Maximum Normal Capacity Operating Limit
• Must be greater than or equal to 0.1 MW
• May submit zero MW for DVERs and NDVERs
• May submit zero MW when Commitment Status = “Outage”
• Sum of JOU shares internal to SPP multiplied by the Maximum Emergency Capacity Operating Limit must be less than or equal to the Physical JOU Resource maximum

8.14 Minimum Normal Capacity Operating Limit
• Not required for BDR
• Must be greater than or equal to Minimum Emergency Capacity Operating Limit
• Must be less than or equal to Minimum Economic Capacity Operating Limit
• Must be greater than or equal to zero
• Must submit zero MW for DVERs and NDVERs

8.15 Maximum Normal Capacity Operating Limit
• Not required for BDR
• Must be less than or equal to Maximum Emergency Capacity Operating Limit
• Must be greater than or equal to the Maximum Economic Capacity Operating Limit
• Must be greater than or equal to 0.1 MW
• May submit zero MW for DVERs and NDVERs
• May submit zero MW when Commitment Status = “Outage”

8.16 **Turn-Around Ramp Rate Factor**

- Must be between 0.01 and 1.00

8.17 **Energy Dispatch Status**

- Only allow “Not Qualified” status for DRRs

8.18 **Energy Offer Curve**

- Must indicate whether or not “SLOPE” is used when submitting offer curve
- Prices must be monotonically non-decreasing
- MW must be increasing
- Must have at least one MW point that is greater than zero.
- May include up to 10 $/MW points
- MW must be greater than zero MW
- Highest $/MW Point cannot exceed Energy Offer Cap = $1000/MWh
- Lowest $/MW Point cannot be less than Energy Offer Floor = Negative $500/MWh

8.19 **Energy Ramp Rate Curve**

- The same MW cannot be used in multiple breakpoint limits
- Must include at least one Breakpoint Limit which includes Ramp Rate Up (Down) and Emergency Ramp Rate Up (Down)
- May include up to 10 Breakpoint Limits
- Normal Ramp Rate must be greater than zero
- Emergency Ramp Rate must be greater than zero
- Emergency Ramp Rate Up must be greater than or equal to Normal Ramp Rate Up
• Emergency Ramp Rate Down must be greater than or equal to Normal Ramp Rate Down
9. Energy Resource Offer (MCR)

The validations defined in this section apply to the submission of all Energy Resource Offer parameters for MCRs. This section specifically addresses the business rules/validations not enforced in the associated Energy XSD for each Energy Resource Offer parameter. Please refer to the Energy XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

9.1 Asset Owner
- Must be an active Asset Owner in the SPP Markets System

9.2 Resource Name
- Must be a Configuration name associated with the Asset Owner
- Must be an active Configuration in the SPP Markets System
- Must be an eligible transitions when submitting a Transition Offer

9.3 Operating Day
- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a Resource Offer for an OD greater than seven days from current date

9.4 Operating Hour
- Must be within the Market submittal timeframe based on Market Type
  - Day-Ahead (DAMKT) – prior to market close
  - Real-Time (RTBM) – at least 30 minutes prior to Operating Hour (OH)

**Important:** The RTBM submittal window for the next Operating Day will be temporarily closed while the DA-RUC study takes a snapshot of the Real-Time Resource offers. The snapshot takes approximately 10 minutes. During the snapshot, RTBM submissions for the next Operating Day will be rejected.

9.5 Market Type
- If MarketType is "DAMKT", the Resource Offer parameters apply to only DAMKT and are subject to validations associated with the DAMKT
- If MarketType is "DAMKT" and any parameter fails a validation for DAMKT, the entire submission will be rejected
9.6 Transition Cost
• Must be greater than or equal to zero

9.7 Start-Up Cost
• Must be non-decreasing from hot, intermediate, and cold
• Must be greater than or equal to zero

9.8 Transition Time
• Must be submitted as hour:minute (HR:MI)
• When submitted as NULLv, this indicates to the Market System that the unit does not have a set transition time

9.9 Start-Up Time
• Must be submitted as hour:minute (HR:MI)

9.10 Minimum Run Time
• Minimum Run Time should be less than or equal to Maximum Run Time
• Must be submitted as hour:minute (HR:MI)
• Must be greater than or equal to 00:00
• If Minimum Run Time is submitted as NULLvi, this indicates to the Market System that the unit does not have a minimum Run Time
• Cannot be submitted as NULLvi when submitting a Group Offer
9.11 Maximum Run Time
- Must be submitted as hour:minute (HR:MI)
- Maximum Run Time should be greater than or equal to the Minimum Run Time
- Must be greater than or equal to 00:00
- If Maximum Run Time is submitted as NULL, this indicates to the Market System that the unit has an infinite Run Time

9.12 Minimum Down Time
- Must be submitted as hour:minute (HR:MI)
- Must be greater than or equal to 00:00
- If Minimum Down Time is submitted as NULL, this indicates to the Market System that the unit does not have a minimum Down Time

9.13 Minimum Emergency Capacity Run Time
- Must be submitted as hour:minute (HR:MI)
- Must be greater than or equal to 00:00

9.14 Maximum Emergency Capacity Run Time
- Must be submitted as hour:minute (HR:MI)
- Must be greater than or equal to 00:00

9.15 Hot to Cold Time
- Must be submitted as hour:minute (HR:MI)
- Must be greater than or equal to the Hot to Intermediate Time
- Must be greater than or equal to 00:00

9.16 Hot to Intermediate Time
- Must be submitted as hour:minute (HR:MI)
- Must be less than or equal to the Hot to Cold Time
- Must be greater than or equal to 00:00
9.17 **Maximum Daily Starts**
- Must be greater than or equal to zero
- Must be less than or equal to Maximum Weekly Starts
- If Maximum Daily Starts is submitted as NULL, this indicates to the Market System that the unit may be started an infinite number of times in an Operating Day.

9.18 **Maximum Weekly Starts**
- Must be greater than or equal to zero
- Must be greater than or equal to Maximum Daily Starts
- If Maximum Weekly Starts is submitted as NULL, this indicates to the Market System that the unit may be started an infinite number of times weekly
- If Maximum Daily Starts is NULL then Maximum Weekly Starts must be NULL

9.19 **Maximum Daily Energy**
- Must be greater than zero
- If Maximum Daily Energy is submitted as NULL, this indicates to the Market System that the unit does not have a maximum amount of daily energy

9.20 **Energy Dispatch Status**
- Only allow “Not Qualified” status for DRRs

9.21 **Commitment Status**
- Participants are not allowed to submit "Not Participating" in RTBM only in DAMKT
- Participants are not allowed to submit “Self” for more than one Configuration of an MCR Plant for the same operating hour.
- A contiguous “Self” commit status for two different Configurations can only be submitted if a registered transition exists between the two specified Configurations.

9.22 **Energy Offer Curve**
- Must indicate whether or not “SLOPE” is used when submitting offer curve
- Prices must be monotonically non-decreasing
- MW must be increasing
• Must have at least one MW point that is greater than zero
• May include up to 10 $/MW points
• MW must be greater than zero MW
• Highest $/MW Point cannot exceed Energy Offer Cap = $1000/MWh
• Lowest $/MW Point cannot be less than Energy Offer Floor = Negative $500/MWh

9.23 Minimum Economic Capacity Operating Limit
• Must be less than or equal to the Maximum Economic Capacity Operating Limit
• Must be greater than or equal to the Minimum Normal Capacity Operating Limit
• If Regulation limits exist, must be less than or equal to Minimum Regulation Capacity Operating Limit
• Must be greater than or equal to Minimum Capacity Operating Limit submitted during the resource Registration process for RTBM
• Must be greater than or equal to zero MW
• Must submit zero MW for DVERs and NDVERs

9.24 Maximum Economic Capacity Operating Limit
• Must be greater than or equal to the Minimum Economic Capacity Operating Limit
• Must be less than or equal to the Maximum Normal Capacity Operating Limit
• If Regulation limits exist, must be greater than or equal to Maximum Regulation Capacity Operating Limit
• Must be less than or equal to Maximum Capacity Operating Limit submitted during the resource Registration process
• Must be greater than or equal to 0.1 MW
• May submit zero MW for DVERs and NDVERs
• May submit zero MW when Commitment Status = “Outage”

9.25 Minimum Regulation Capacity Operating Limit
• A NULL value must be submitted for resources that are registered as “Not Qualified” for the specified product

Note: The above validation only applies to submissions made via the Energy Web Service.
• A NULL value may be submitted for resources that are registered as “Qualified” for a Regulation product as long as a dispatch status of “Not Qualified” is also submitted for the Operating Hour

• Resource must be Regulation Qualified

• Must be less than or equal to Maximum Regulation Capacity Operating Limit

• Must be greater than or equal to Minimum Economic Capacity Operating Limit

• Must be greater than or equal to zero MW

• Must submit zero MW for DVERs and NDVERs

9.26 Maximum Regulation Capacity Operating Limit

• A NULL value must be submitted for resources that are registered as “Not Qualified” for the specified product

**Note:** The above validation only applies to submissions made via the Energy Web Service.

• A NULL value may be submitted for resources that are registered as “Qualified” for a Regulation product as long as a dispatch status of “Not Qualified” is also submitted for the Operating Hour.

• Resource must be Regulation Qualified

• Must be less than or equal to Maximum Economic Capacity Operating Limit

• Must be greater than or equal to Minimum Regulation Capacity Operating Limit

• Must be greater than or equal to 0.1 MW

• May submit zero MW for DVERs and NDVERs

• May submit zero MW when Commitment Status = “Outage”

9.27 Minimum Emergency Capacity Operating Limit

• Not required for BDR

• Must be less than or equal to Minimum Normal Capacity Operating Limit

• Must be less than or equal to Maximum Emergency Capacity Operating Limit

• Must be greater than or equal to zero MW

• Must submit zero MW for DVERs and NDVERs
9.28 **Maximum Emergency Capacity Operating Limit**
- Not required for BDR
- Must be greater than or equal to Maximum Normal Capacity Operating Limit
- Must be greater than or equal to 0.1 MW
- May submit zero MW for DVERs and NDVERs
- May submit zero MW when Commitment Status = “Outage”

9.29 **Minimum Normal Capacity Operating Limit**
- Not required for BDR
- Must be greater than or equal to Minimum Emergency Capacity Operating Limit
- Must be less than or equal to Minimum Economic Capacity Operating Limit
- Must be greater than or equal to zero
- Must submit zero MW for DVERs and NDVERs

9.30 **Maximum Normal Capacity Operating Limit**
- Not required for BDR
- Must be less than or equal to Maximum Emergency Capacity Operating Limit
- Must be greater than or equal to the Maximum Economic Capacity Operating Limit
- Must be greater than or equal to 0.1 MW
- May submit zero MW for DVERs and NDVERs
- May submit zero MW when Commitment Status = “Outage”

9.31 **Maximum Quick-Start Response Limit**
- May be submitted for Supplemental qualified resource.
- Must be greater than or equal to 0.0 MW
- Must be less than or equal to the Maximum Economic Capacity Operating Limit
- Must be less than or equal to the 10-minute resource capability from zero MW calculated by SPP using the Contingency Reserve Ramp Rate curve submitted by the MP.
- Must be submitted as zero if a transition with the same From Configuration with a non-zero Quick-Start Response Limit value exists.
• Cannot submit as non-zero for more than one Configuration of an MCR Plant for the same operating hour.

9.32 Turn-Around Ramp Rate Factor
• Must be between 0.01 and 1.00

9.33 No-Load Offer
• Must be greater than or equal to zero

9.34 Min-to-Off Time
• Must be submitted as hour:minute (HR:MI)
• Must be greater than 00:00

9.35 Sync-to-Min Time
• Must be submitted as hour:minute (HR:MI)
• Must be greater than 00:00

9.36 Energy Ramp Rate Curve
• The same MW cannot be used in multiple breakpoint limits
• Must include at least one Breakpoint Limit which includes Ramp Rate Up (Down) and Emergency Ramp Rate Up (Down)
• May include up to 10 Breakpoint Limits
• Normal Ramp Rate must be greater than zero
• Emergency Ramp Rate must be greater than zero
• Emergency Ramp Rate Up must be greater than or equal to Normal Ramp Rate Up
• Emergency Ramp Rate Down must be greater than or equal to Normal Ramp Rate Down
• For DVERs with an Emergency Maximum Capacity Operating Limit of less than 200MW, the maximum ramp rate between MW specified in the Ramp-Rate-Up Curve and Ramp-Rate Down Curve in the RTBM Resource Offer multiplied by 5 cannot exceed 40MW
• For DVERs with an Emergency Maximum Capacity Operating Limit greater than or equal to 200MW, the maximum ramp rate between MW levels specified in the Ramp-Rate-Up Curve and Ramp-Rate-Down Curve in the RTBM Resource Offer multiplied by 5 cannot exceed 20% of the DVER’s Emergency Maximum Capacity Operating Limit.
10. Energy Mitigated Resource Offer

The validations defined in this section apply to the submission of all Energy Mitigated Resource Offer parameters. This section specifically addresses the business rules/validations not enforced in the associated Energy XSD for each Energy Mitigated Resource Offer parameter. Please refer to the Energy XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

10.1 Asset Owner
- Must be an active asset owner in the SPP Markets System

10.2 Resource Name
- Must be a resource name associated with the asset owner.
- Must be an active resource in the SPP Markets System
- Must be a Configuration name associated with the Asset Owner
- Must be an active Configuration in the SPP Markets System
- Must be an eligible transitions when submitting a Transition Offer

10.3 Operating Day
- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a Resource Offer for an OD greater than seven days from current date

10.4 Operating Hour
- Must be within the Market submittal timeframe based on Market Type
  - Day-Ahead – prior to market close
  - Real-Time – at least 30 minutes prior to Operating Hour (OH)

Important: In accordance with the Marketplace Protocols, the Mitigation Resource Offer submittal window for the next Operating Day (OD+1) will be temporarily closed while the DAMKT executes. Mitigation submissions for the next Operating Day submitted between the Day-Ahead Market close (typically 9:30 CPT) and Day-Ahead Market approval will be rejected.
10.5 **Mitigated Transition Cost**
- Must be greater than or equal to zero

10.6 **Mitigated Start-Up Cost**
- Must be non-decreasing from hot, intermediate, and cold
- Must be greater than or equal to zero

10.7 **Mitigated No-Load Offer**
- Should allow NULL value for EDR resources
- Must be greater than or equal to zero

10.8 **Mitigated Energy Offer Curve**
- Must indicate whether or not “SLOPE” is used when submitting offer curve
- Prices must be monotonically non-decreasing
- MW must be increasing
- Must have at least one MW point that is greater than zero
- May include up to 10 $/MW points
- Should accept NULL values if the EDR is not associated with a DC Tie
- MW must be greater than zero MW
- Highest $/MW Point cannot exceed Energy Offer Cap = $1000
- Lowest $/MW Point cannot be less than Energy Offer Floor = Negative $500
11. Non-Conforming Load Forecast

The validations defined in this section apply to the submission of Non-Conforming Load Forecast parameters. This section specifically addresses the business rules/validations not enforced in the associated LoadForecast XSD. Please refer to the LoadForecast XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

11.1 Asset Owner Name

- Must be an active Asset Owner in the SPP Markets System

11.2 Non-Conforming Load Name

- Name used to reference the load
- Any non-conforming load of 50 MW or greater must be registered with the Pnode identified
- ForecastAreaType must not equal “CONFORMING”

11.3 Load Forecast Interval

- If Load Forecast Type = “MT”, the following validations are performed.
  - Must be submitted at least 30 minutes prior to the next Operating Hour.
  - Cannot submit a Load Forecast for an Operating Hour greater than seven days from current date
  - Must be in hourly intervals
  - Cannot be deleted intra-hour

- If Load Forecast Type = “ST”, the following validations are performed.
  - Must be submitted in 15-minute intervals. (Optional: participants are not required to submit ST load forecast via Markets UI or API)
  - Must be submitted at least 15 minutes prior to the next 15-minute interval
  - Cannot submit a Load Forecast for an interval greater than seven days from current date
  - Cannot be deleted intra-interval

*Note:* Participants are not required to submit Short-Term non-conforming load forecasts.
11.4 **Load Forecast Type**
- Must be submitted with each load forecast to indicate if the forecast is Short-Term or Mid-Term

11.5 **MW**
- Must be greater than or equal to zero MW
12. Notification Listener Registration

The validations defined in this section apply to the registration of participant Notification Listener URLs. This section specifically addresses the business rules/validations not enforced in the associated Notify XSD. Please refer to the Notify XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

12.1 Asset Owner

- Must be an active asset owner in the SPP Markets System

12.2 URL

- Verify the URL only contains one of the following ports: 443, 1025, 1450, 7338 and/or 8400

12.3 Service Name

- Must be submitted with each listener registration.
- The same participant listener may be registered for more than one SPP Notify Web Service.

12.4 Effective Time

- Date and time when the Markets system should begin sending XML notifications to the endpoint.

12.5 Termination Time

- Date and time when the Markets system should stop sending XML notifications to the endpoint.
- A NULL termination time is allowed and will be translated as a far future date of 12/31/9999 in the Markets system.

12.6 Description

- Optional field for each URL
13. Operating Reserve Resource Offer (non-EDR)

The validations defined in this section apply to the submission of all Operating Reserve Resource Offer parameters for non-EDRs. This section specifically addresses the business rules/validations not enforced in the associated Reserve XSD for each Operating Reserve Resource Offer parameter. Please refer to the Reserve XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

13.1 Asset Owner

- Must be an active asset owner in the SPP Markets System

13.2 Resource Name

- Must be a resource name associated with the asset owner
- Must be an active resource in the SPP Markets System
- Must be a Configuration name associated with the Asset Owner
- Must be an active Configuration in the SPP Markets System

13.3 Operating Day

- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a Resource Offer for an OD greater than seven days from current date

13.4 Operating Hour

- Must be within the Market submittal timeframe based on Market Type
  - Day-Ahead – prior to market close
  - Real-Time – at least 30 minutes prior to Operating Hour (OH)

Important: The RTBM submittal window for the next Operating Day (OD+1) will be temporarily closed while the DA-RUC study takes a snapshot of the Real-Time Resource offers. The snapshot takes approximately 10 minutes. During the snapshot, RTBM submissions for the next Operating Day will be rejected.

13.5 Market Type

- If MarketType is "DAMKT", the Resource Offer parameters apply to only DAMKT and are subject to validations associated with DAMKT
• If MarketType is "DAMKT" and any parameter fails a validation for DAMKT, the entire submission will be rejected

• If MarketType is "RTBM", the Resource Offer parameters apply to only RTBM and are subject to validations associated with RTBM

• If MarketType is "RTBM" and any parameter fails a validation for RTBM, the entire submission will be rejected

• If MarketType is excluded in the XML request, the Resource Offer parameters apply to both DAMKT and RTBM and are subject to validations associated with both markets

• If MarketType is excluded in the XML request and any parameter fails a validation for either DAMKT or RTBM, the entire submission will be rejected

13.6 Minimum Regulation Capacity Operating Limit

• A NULL value may be submitted for resources that are registered as “Qualified” for a Regulation product as long as a dispatch status of “Not Qualified” is also submitted for the Operating Hour
• Resource must be Regulation Up or Regulation Down qualified
• Must be less than or equal to Maximum Regulation Capacity Operating Limit
• Must be greater than or equal to Minimum Economic Capacity Operating Limit
• Must be greater than or equal to zero MW
• Must submit zero MW for DVERs and NDVERs

13.7 Maximum Regulation MW Operating Limit

• A NULL value may be submitted for resources that are registered as “Qualified” for a Regulation product as long as a dispatch status of “Not Qualified” is also submitted for the Operating Hour
• Resource must be Regulation Up or Regulation Down qualified
• Must be less than or equal to Maximum Economic Capacity Operating Limit
• Must be greater than or equal to Minimum Regulation Capacity Operating Limit
• Must be greater than or equal to 0.1 MW
• May submit zero MW for DVERs and NDVERs
• May submit zero MW when Commitment Status = “Outage”
13.8 Regulation Down Reserve Offer

- Must be Qualified to submit offer for Regulation Down
- If Regulation Down Dispatch Status = “Not Qualified”, the FixedMW, Price and Mileage Price must be submitted as NULL.
- If Regulation Down Dispatch Status = “Fixed”, a Price and Mileage Price is required and the FixedMW value must be greater than zero MW
- If Regulation Down Dispatch Status = “Market”, a Price and Mileage Price is required and the FixedMW value must be submitted as NULL.
- Capability Offer + (Mileage Offer * Mileage Factor) cannot exceed the Service Offer Cap = $500/MW
- Capability Offer + (Mileage Offer * Mileage Factor) cannot be less than the Service Offer Floor = Negative $500/MW
- Mileage Offer cannot be less than Regulation Mileage Offer Floor = $0/MW
- Mileage must be zero when the Capability Offer is less than $0/MWh.

Important: Regulation-Down Offers submitted via using the Markets API version implemented to support the Regulation Compensation must have a $0 Mileage Price prior to the Regulation Compensation cutover date.

13.9 Regulation Up Reserve Offer

- Must be Qualified to submit offer for Regulation Up
- If Regulation Up Dispatch Status = “Not Qualified”, the FixedMW, Price and Mileage Price must be submitted as NULL.
- If Regulation Up Dispatch Status = “Fixed”, a Price and Mileage Price is required and the FixedMW value must be greater than zero MW
- If Regulation Up Dispatch Status = “Market”, a Price and Mileage Price is required and the FixedMW value must be submitted as NULL.
- Capability Offer + (Mileage Offer * Mileage Factor) cannot exceed the Service Offer Cap = $500/MW
- Capability Offer + (Mileage Offer * Mileage Factor) cannot be less than the Service Offer Floor = Negative $500/MW
- Mileage Price cannot be less than Regulation Mileage Offer Floor = $0/MW
- Mileage Price must be zero when the Capability Offer is less than $0/MWh.
Important: Regulation-Up Offers submitted via using the Markets API version implemented to support the Regulation Compensation must have a $0 Mileage Price prior to the Regulation Compensation cutover date.

13.10 Spinning Reserve Offer

- Must be Qualified to submit offer for Spinning Reserve

**Note:** Spin Qualified Resources are automatically qualified to provide on-line Supplemental Reserve.

- If Spin Dispatch Status = “Not Qualified”, the FixedMW and Price must be submitted as NULL.

**Note:** If a Fixed MW has been submitted for Supplemental Reserve, MCE will not clear the on-line Supplemental Reserve Fixed MW.

- If Spin Dispatch Status = “Fixed”, a Price is required and the FixedMW value must be greater than zero MW

- If Spin Dispatch Status = “Market”, a Price is required and the FixedMW value must be submitted as NULL.

**Note:** Spin Dispatch Status = “Market” also applies to on-line Supplemental Reserve Offers unless a Fixed MW and Price has been submitted for Supplemental Reserve.

- Offer cannot exceed Contingency Reserve Offer Cap = $100/MW

- Offer cannot be less than Contingency Reserve Offer Floor = Negative $100/MW

- Mileage Price must be submitted as NULL.

13.11 Online Supplemental Reserve Offer

- Must be Qualified to submit offer for Spinning Reserve

**Note:** Spin Qualified Resources are automatically qualified to provide on-line Supplemental Reserve.

- If a resource is registered as a Spin Qualified Resource, but not a Supplemental Qualified Resource, the on-line Supplemental Reserve Offer must abide by the following rules.
  - Supplemental Reserve Dispatch Status must be submitted as “Not Qualified” and
  - Supplemental Fixed MW must be submitted as NULL and
  - Supplemental Price may be submitted as NULL or price may be submitted between the offer floor ($100) and offer cap $100.
• If resource is registered as Supplemental Qualified as well as Spin Qualified and the Supplemental Dispatch Status = “NOTQUALIFIED”, the on-line Supplemental Offer must abide by the following rules.
  o Supplemental Fixed MW must be submitted as NULL
  o Supplemental Price may be submitted as NULL or price may be submitted between the offer floor ($100) and offer cap $100.

**Important:** For on-line Supplemental Reserve Offers, a NULL offer price will be treated as a $0/MW offer by the Market Clearing Engine.

• Offer cannot exceed Contingency Reserve Offer Cap = $100/MW
• Reserve Offer cannot be less than Contingency Reserve Offer Floor = Negative $100/MW NULL
• Mileage Price must be submitted as NULL.

### 13.12 Offline Supplemental Reserve Offer

• Must be Qualified to submit offers for off-line Supplemental Reserve

**Note:** The “Not Qualified” Status only applies for Supplemental Qualified Resources and applies only to off-line Supplemental Reserve (i.e. when the Resource is not committed).

• If resource is registered as Supplemental Qualified, not Spin Qualified and the Supplemental Dispatch Status = “NOTQUALIFIED”, the offer must abide by the following rules.
  o Supplemental Fixed MW must be submitted as NULL
  o Supplemental Price must be submitted as NULL

• If resource is registered as Supplemental Qualified as well as Spin Qualified and the Supplemental Dispatch Status = “NOTQUALIFIED”, the on-line Supplemental Offer must abide by the following rules.
  o Supplemental Fixed MW must be submitted as NULL and
  o Supplemental Price may be submitted as NULL or price may be submitted between the offer floor ($100) and offer cap $100.

**Important:** For on-line Supplemental Reserve Offers, a NULL offer price will be treated as a $0/MW offer by the Market Clearing Engine.

• If Supplemental Dispatch Status = “Fixed”, a Price is required and the FixedMW value must be greater than zero MW.

**Note:** Supplemental Reserve Dispatch Status = “Fixed” can only be submitted for Supplemental Qualified Resources and will apply to off-line Supplemental Reserve if the Resource is off-line and to on-line Supplemental Reserve if the Resource is on-line.
• If Supplemental Dispatch Status = “Market”, a Price is required and the FixedMW value must be submitted as NULL.

*Note:* Supplemental Reserve Dispatch Status = “Market” only applies to offers for off-line Supplemental Reserve.

• Offer cannot exceed Contingency Reserve Offer Cap = $100/MW
• Offer cannot be less than Contingency Reserve Offer Floor = Negative $100/MW
• Mileage Price must be submitted as NULL.

### 13.13 Operating Reserve Ramp Rate Curve

• Submission must indicate if the curve is for Regulation or Contingency Reserve
• The same MW cannot be used in multiple breakpoint limits
• Must include at least one Breakpoint Limit which includes Regulation (or Contingency Reserve) Ramp Rate
• May include up to 10 Breakpoint Limits
• MW must be greater than zero
• The 10-minute resource capability from zero MW calculated by SPP using the Contingency Reserve Ramp Rate curve submitted by the MP must be greater than or equal to the Offline Supplemental MW (Maximum Quick-Start Resource Limit).
• For JOUs under the combined resource option, the 10-minute resource capability from zero MW calculated by SPP using the Contingency Reserve Ramp Rate curve submitted by the JOU Share must be greater than or equal to the Offline Supplemental MW multiplied by the JOU share’s percent ownership.

### 13.14 Operating Reserve Dispatch Status

• Resource must be qualified at registration for the specified Operating Reserve product.
• The Regulation-Up dispatch status may only be submitted as “Not Qualified” if the Resource was registered as a Regulation-Up Qualified Resource or a Regulation Qualified Resource.
• The Regulation-Down dispatch status may only be submitted as “Not Qualified” if the Resource was registered as a Regulation-Down Qualified Resource or a Regulation Qualified Resource.
• The Spinning Reserve dispatch status may only be submitted as “Not Qualified” if the Resource was registered as a Spin Qualified Resource (which will automatically disqualify the Resource from providing on-line Supplemental Reserve).
• The Supplemental Reserve dispatch status may only be submitted as “Not Qualified” if the Resource was registered as off-line Supplemental Qualified Resource.

• The Supplemental Reserve dispatch status must be submitted as “Not Qualified” if the Resource was registered as a Spinning Qualified Resource, but not off-line Supplemental Qualified Resource.
14. Operating Reserve Resource Offer (EDR only)

The validations defined in this section apply to the submission of all Operating Reserve Resource Offer parameters for EDRs. This section specifically addresses the business rules/validations not enforced in the associated Reserve XSD for each Operating Reserve Resource Offer parameter. Please refer to the Reserve XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

14.1 Asset Owner

- Must be an active Asset Owner in the SPP Markets System

14.2 Resource Name

- Must be a Resource name associated with the Asset Owner
- Must be an active Resource in the SPP Markets System
- Must be an EDR

14.3 Operating Day

- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a Resource Offer for an OD greater than seven days from current date

14.4 Operating Hour

- Must be within the Market submittal timeframe based on Market Type
  - Day-Ahead – prior to market close
  - Real-Time – at least 30 minutes prior to Operating Hour (OH)

**Important:** The RTBM submittal window for the next Operating Day will be temporarily closed while the DA-RUC study takes a snapshot of the Real-Time Resource offers. The snapshot takes approximately 10 minutes. During the snapshot, RTBM submissions for the next Operating Day will be rejected.

14.5 Market Type

- If MarketType is "DAMKT", the Resource Offer parameters apply to only DAMKT and are subject to validations associated with DAMKT
- If MarketType is "DAMKT" and any parameter fails a validation for DAMKT, the entire submission will be rejected
• If MarketType is "RTBM", the Resource Offer parameters apply to only RTBM and are subject to validations associated with RTBM
• If MarketType is "RTBM" and any parameter fails a validation for RTBM, the entire submission will be rejected
• If MarketType is excluded in the XML request, the Resource Offer parameters apply to both DAMKT and RTBM and are subject to validations associated with both markets
• If MarketType is excluded in the XML request and any parameter fails a validation for either DAMKT or RTBM, the entire submission will be rejected

### 14.6 Regulation Down Reserve Offer

- Must be Qualified to submit offer for Regulation Down
- If Regulation Down Dispatch Status = “Not Qualified”, the FixedMW, Price and Mileage Price must be submitted as NULLiii.
- If Regulation Down Dispatch Status = “Fixed”, a Price and Mileage Price is required and the FixedMW value must be greater than zero MW
- If Regulation Down Dispatch Status = “Market”, a Price and Mileage Price is required and the FixedMW value must be submitted as NULLiii
- Capability Offer + (Mileage Offer * Mileage Factor) cannot exceed the Service Offer Cap = $500/MW
- Capability Offer + (Mileage Offer * Mileage Factor) cannot be less than the Service Offer Floor = Negative $500/MW
- Mileage Price cannot be less than Regulation Mileage Offer Floor = $0/MW
- Mileage Price must be zero when the Capability Offer is less than $0/MWh.

**Important:** Regulation-Down Offers submitted via using the Markets API version implemented to support the Regulation Compensation must have a $0 Mileage Price prior to the Regulation Compensation cutover date.

### 14.7 Regulation Up Reserve Offer

- Must be Qualified to submit offer for Regulation Up
- If Regulation Up Dispatch Status = “Not Qualified”, the FixedMW, Price and Mileage Price must be submitted as NULLiii.
- If Regulation Up Dispatch Status = “Fixed”, a Price and Mileage Price is required and the FixedMW value must be greater than zero MW
• If Regulation Up Dispatch Status = “Market”, a Price and Mileage Price is required and the FixedMW value must be submitted as NULL

• Capability Offer + (Mileage Offer * Mileage Factor) cannot exceed the Service Offer Cap = $500/MW

• Capability Offer + (Mileage Offer * Mileage Factor) cannot be less than the Service Offer Floor = Negative $500/MW

• Mileage Price cannot be less than Regulation Mileage Offer Floor = $0/MW

• Mileage Price must be zero when the Capability Offer is less than $0/MWh.

**Important:** Regulation-Up Offers submitted via using the Markets API version implemented to support the Regulation Compensation must have a $0 Mileage Price prior to the Regulation Compensation cutover date.

### 14.8 Spinning Reserve Offer

• Must be Qualified to submit offer for Spinning Reserve

**Note:** Spin Qualified Resources are automatically qualified to provide on-line Supplemental Reserve.

• If Spin Dispatch Status = “Not Qualified”, the FixedMW and Price must be submitted as NULL.

**Note:** If a Fixed MW has been submitted for Supplemental Reserve, MCE will not clear the on-line Supplemental Reserve Fixed MW.

• If Spin Dispatch Status = “Fixed”, a Price is required and the FixedMW value must be greater than zero MW

• If Spin Dispatch Status = “Market”, a Price is required and the FixedMW value must be submitted as NULL

**Note:** Spin Dispatch Status = “Market” also applies to on-line Supplemental Reserve Offers unless a Fixed MW and Price has been submitted for Supplemental Reserve.

• Offer cannot exceed Contingency Reserve Offer Cap = $100/MW

• Offer cannot be less than Contingency Reserve Offer Floor = Negative $100/MW

• Mileage Price must be submitted as NULL.

### 14.9 Online Supplemental Reserve Offer

• Must be Qualified to submit offer for Spinning Reserve
Note: Spin Qualified Resources are automatically qualified to provide on-line Supplemental Reserve.

- If a resource is registered as a Spin Qualified Resource, but not a Supplemental Qualified Resource, the on-line Supplemental Reserve Offer must abide by the following rules.
  - Supplemental Reserve Dispatch Status must be submitted as “Not Qualified” and
  - Supplemental Fixed MW must be submitted as NULL and
  - Supplemental Price may be submitted as NULL or price may be submitted between the offer floor ($100) and offer cap $100.

- If resource is registered as Supplemental Qualified as well as Spin Qualified and the Supplemental Dispatch Status = “NOTQUALIFIED”, the on-line Supplemental Offer must abide by the following rules.
  - Supplemental Fixed MW must be submitted as NULL and
  - Supplemental Price may be submitted as NULL or price may be submitted between the offer floor ($100) and offer cap $100.

Important: For on-line Supplemental Reserve Offers, a NULL offer price will be treated as a $0/MW offer by the Market Clearing Engine.

- Offer cannot exceed Contingency Reserve Offer Cap = $100/MW
- Reserve Offer cannot be less than Contingency Reserve Offer Floor = Negative $100/MW
- Mileage Price must be submitted as NULL.

14.10 Offline Supplemental Reserve Offer

- Must be Qualified to submit offers for off-line Supplemental Reserve

Note: The “Not Qualified” Status only applies for Supplemental Qualified Resources and applies only to off-line Supplemental Reserve (i.e. when the Resource is not committed).

- If resource is registered as Supplemental Qualified, not Spin Qualified and the Supplemental Dispatch Status = “NOTQUALIFIED”, the offer must abide by the following rules.
  - Supplemental Fixed MW must be submitted as NULL
  - Supplemental Price must be submitted as NULL

- If resource is registered as Supplemental Qualified as well as Spin Qualified and the Supplemental Dispatch Status = “NOTQUALIFIED”, the offer must abide by the following rules.
  - Supplemental Fixed MW must be submitted as NULL and
  - Supplemental Price may be submitted as NULL or price may be submitted between the offer floor ($100) and offer cap $100.
Important: For on-line Supplemental Reserve Offers, a NULL offer price will be treated as a $0/MW offer by the Market Clearing Engine.

- If Supplemental Dispatch Status = “Fixed”, a Price is required and the FixedMW value must be greater than zero MW.

Note: Supplemental Reserve Dispatch Status = “Fixed” can only be submitted for Supplemental Qualified Resources and will apply to off-line Supplemental Reserve if the Resource is off-line and to on-line Supplemental Reserve if the Resource is on-line.

- If Supplemental Dispatch Status = “Market”, a Price is required and the FixedMW value must be submitted as NULL.

Note: Supplemental Reserve Dispatch Status = “Market” only applies to offers for off-line Supplemental Reserve.

- Offer cannot exceed Contingency Reserve Offer Cap = $100/MW
- Offer cannot be less than Contingency Reserve Offer Floor = Negative $100/MW
- Mileage Price must be submitted as NULL.

14.11 Operating Reserve Ramp Rate Curve

- Submission should indicate if the curve is for Regulation or Contingency Reserve
- The same MW cannot be used in multiple breakpoint limits
- Must include at least one Breakpoint Limit which includes Regulation (or Contingency Reserve) Ramp Rate
- May include up to 10 Breakpoint Limits
- MW must be greater than zero

14.12 Operating Reserve Dispatch Status

- Resource must be qualified at registration for the specified Operating Reserve product.
- The Regulation-Up dispatch status may only be submitted as “Not Qualified” if the Resource was registered as a Regulation-Up Qualified Resource or a Regulation Qualified Resource.
- The Regulation-Down dispatch status may only be submitted as “Not Qualified” if the Resource was registered as a Regulation-Down Qualified Resource or a Regulation Qualified Resource.
- The Spinning Reserve dispatch status may only be submitted as “Not Qualified” if the Resource was registered as a Spin Qualified Resource (which will automatically disqualify the Resource from providing on-line Supplemental Reserve).
• The Supplemental Reserve dispatch status may only be submitted as “Not Qualified” if the Resource was registered as off-line Supplemental Qualified Resource.

• The Supplemental Reserve dispatch status must be submitted as “Not Qualified” if the Resource was registered as a Spinning Qualified Resource, but not off-line Supplemental Qualified Resource.
15. Operating Reserve Mitigated Resource Offer

The validations defined in this section apply to the submission of all Operating Reserve Mitigated Resource Offer parameters. This section specifically addresses the business rules/validations not enforced in the associated Reserve XSD for each Operating Reserve Resource Offer parameter. Please refer to the Reserve XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

15.1 Asset Owner
- Must be an active i asset owner in the SPP Markets System

15.2 Resource Name
- Must be a Resource name associated with the Asset Owner
- Must be an active i Resource in the SPP Markets System
- Must be a Configuration name associated with the Asset Owner
- Must be an active i Configuration in the SPP Markets System

15.3 Operating Day
- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a Resource Offer for an OD greater than seven days from current date

15.4 Operating Hour
- Must be within the Market submittal timeframe based on Market Type
  o Day-Ahead – prior to market close
  o Real-Time – at least 30 minutes prior to Operating Hour (OH)

**Important:** In accordance with the Marketplace Protocols, the Mitigation Resource Offer submittal window for the next Operating Day (OD+1) will be temporarily closed while the DAMKT executes. Mitigation submissions for the next Operating Day submitted between the Day-Ahead Market close (typically 9:30 CPT) and Day-Ahead Market approval will be rejected.

15.5 Product Type
- Must be Qualified to submit offer for the specific product type (REGUP, REGDN, SPIN, SUPP)
Note: Spinning qualified resources are automatically qualified to provide On-line Supplemental resource offers.

15.6 Price

- REGUP Or REGDN Capability Offer + (Mileage Offer * Mileage Factor) cannot exceed the Service Offer Cap = $500
- REGUP Or REGDN Capability Offer + (Mileage Offer * Mileage Factor) cannot be less than the Service Offer Floor = Negative $500
- REGUP Or REGDN Mileage Price cannot be less than Regulation Mileage Offer Floor = $0
- REGUP Or REGDN Mileage Price must be zero when the Regulation-Up/Regulation-Down Capability Offer is less than $0.

Important: Regulation-Up/Regulation-Down Offers submitted via using the Markets API version implemented to support the Regulation Compensation must have a $0 Mileage Price prior to the Regulation Compensation cutover date.

- Spinning Reserve or Supplemental Reserve Price cannot exceed Contingency Reserve Offer Cap = $100
- Spinning Reserve or Supplemental Reserve Price cannot be less than Contingency Reserve Offer Floor = Negative $100
- Spinning Reserve or Supplemental Reserve Mileage Price must be submitted as NULL.
16. Virtual Bids

The validations defined in this section apply to the submission of Virtual Bids parameters. This section specifically addresses the business rules-validations not enforced in the associated Virtual XSD. Please refer to the Virtual XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

16.1 Asset Owner Name

- Must be an active Asset Owner in the SPP Markets System

16.2 Operating Day

- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a Resource Offer for an OD greater than seven days from current date

16.3 Location Name

- Must be a valid Settlement Location in the SPP Markets System

16.4 Operating Hour

- Must be for a future Operating Hour (OH)
- Must be within the Market submittal timeframe for Day-Ahead – prior to market close

**Note:** The Market submittal timeframe for Day Ahead applies to Virtual Bid submissions and deletions.

16.5 Start Hour

- Must be within the Market submittal timeframe for Day-Ahead – prior to market close
- Must be a future Operating Hour (OH)
- The start hour and stop hour cannot span more than one Operating Day

**Note:** The Start Hour only applies to the PostVirtualBidSetByRange Web Service operation

16.6 Stop Hour

- Must be a future Operating Hour (OH)
• Must be within the Market submittal timeframe for Day-Ahead – prior to market close
• The start hour and stop hour cannot span more than one Operating Day

**Note:** The Stop Hour only applies to the PostVirtualBidSetByRange Web Service operation

### 16.7 Virtual Bid Curve

• Only one Bid for each Asset Owner at any Settlement Location for a particular Operating Hour
• Must indicate whether or not “SLOPE” is used in the submitted curve
• May include up to 10 MW/$ points
• MW must be greater than zero MW
• Prices must be monotonically non-increasing
• MW must be increasing
17. Virtual Offers

The validations defined in this section apply to the submission of Virtual Offers parameters. This section specifically addresses the business rules/validations not enforced in the associated Virtual XSD. Please refer to the Virtual XSD and Markets Web Services Data Exchange Guide for more information about the constraints enforced in the XSDs.

17.1 Asset Owner Name
- Must be an active Asset Owner in the SPP Markets System

17.2 Operating Day
- Must be greater than or equal to the current Operating Day (OD)
- Cannot submit a Virtual Offer for an OD greater than seven days from current date

17.3 Location Name
- Must be a valid Settlement Location in the SPP Markets System

17.4 Operating Hour
- Must be a future Operating Hour (OH)
- Must be within the Market submittal timeframe for Day-Ahead – prior to market close

Note: The Market submittal timeframe for Day Ahead applies to Virtual Bid submissions and deletions.

17.5 Start Hour
- Must be within the Market submittal timeframe for Day-Ahead – prior to market close
- Must be a future Operating Hour
- The start hour and stop hour cannot span more than one Operating Day

Note: The Start Hour only applies to the PostVirtualOfferSetByRange Web Service operation

17.6 Stop Hour
- Must be within the Market submittal timeframe for Day-Ahead – prior to market close
- Must be a future Operating Hour (OH)
- The start hour and stop hour cannot span more than one Operating Day

**Note:** The Stop Hour only applies to the PostVirtualOfferSetByRange Web Service operation

### 17.7 Virtual Offer Curve

- Only one offer for each Asset Owner at any Settlement Location for a particular Hour
- Must indicate whether or not “SLOPE” is used in the submitted curve
- May include up to 10 MW/$ points
- MW must be greater than zero MW
- Prices must be monotonically non-decreasing
- MW must be increasing
- Highest $/MW Point cannot exceed Energy Offer Cap = $1000/MWh
- Lowest $/MW Point cannot be less than Energy Offer Floor = Negative $500/MWh

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1. The term *active* in this document is used to indicate the Asset Owner, Resource or Settlement Location is included in the Commercial Model for the operating timeframe specified in the submission.
2. Operating Day in the context of a Day-Ahead Market study is the day period the study is solving for. For example, if the Day-Ahead study is on Wednesday, the Operating Day will be the next day (Thursday).
3. A NULL value should be represented in XML as xsi:nil="true" (e.g., `<v11:MinRuntime xsi:nil="true"/>`).
4. A NULL value should be represented in XML as xsi:nil="true" (e.g., `<v11:MinRuntime xsi:nil="true"/>`).