Release Notes – Business Rules Version 11.4.1x
Up to WINTER 2021 Release for SIBR/BSAP/RC-BSAP

Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>By</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/10/2021</td>
<td>1.0</td>
<td>WT</td>
<td>Initial Draft for Winter Release 2021 set. VOM/JOU</td>
</tr>
</tbody>
</table>
For the Release Notes version 1.0 this will be the Baseline Release and is referenced in the revision history as the Initial Draft. For modifications and adjustments of the Business Rules(BR) for SIBR/BSAP/RC-BSAP that come after the Baseline Release the revision history will show an Incremental change with the new BR(vX.X.x). The incremental changes will be listed on top of the baseline.

The Baseline Release will identify all the Projects associated with the SIBR/BSAP/RC-BSAP Release and if there are any changes to the UI or API web services. Changes to the UI will be documented in the SIBR SC Users Guide, BSAP Users Guide, or the RC-BSAP Users Guide. Web services changes will be documented in the Technical Specifications and posting of the related artifacts on the application pages on our Developers site.

Contents

Baseline Release

Fall 2021 for ESDER 4 Release Impacts
Fall 2021 Business Rules Fall 2021 Release Projects (included Independent Projects)
Fall ESDER 4:
SIBR UI Screen shots
SIBR API XML Text/Grid Screen shot
Revision History for Rules: (11.3.1)
Revision of Terms for Summer 2021 Release: 
Business Rules Impacted – Fall 2021 for Fall Release:
New and Modified rules are as follows: (Detail Summary)

CAISO/PSTD/WT/SU Last Revision 11/10/2021
Baseline Release

This set of Release Notes covers the changes going forward from the Business Rules Version 11.4.1.

WINTER 2021 for Variable Operations and Maintenance (VOM) and Joint Ownded Unit (JOU) Release Impacts

Business Rule changes within a release may force changes to the User Interfaces or Web Services depending on the requirement changes that are needed to support new or modified functionality within system applications. The following elements defined below give a quick overview of expected changes to the systems that interface with the Business Rules.

<table>
<thead>
<tr>
<th>Application</th>
<th>Element</th>
<th>Change</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIBR</td>
<td>SIBR UI</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIBR Web Services</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIBR Rules</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>BSAP</td>
<td>BSAP UI</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BSAP Web Services</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BSAP Rules</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>RC-BSAP</td>
<td>RC-BSAP UI</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RC-BSAP Web Services</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RC-BSAP Rules</td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>
Please visit the relevant user documentation on the Release Planning page for the updates to the documents associated to a specific Release.


SIBR User Guide – UI changes will be documented in this document.
SIBR Interface Specifications - all web service (wsdl, xsd, xml) changes will be documented in this document.
https://developer.caiso.com

BSAP User Guide – UI changes will be documented in this document.
Base Schedule Interface Specification Web Services - all web service (wsdl, xsd, xml) changes will be documented in this document.
https://developer.caiso.com

RC-BSAP User Guide – UI changes will be documented in this document.
RC Base Schedule Interface Specification Web Services - all web service (wsdl, xsd, xml) changes will be documented in this document. https://developer.caiso.com


The Winter 2021 Release rules capture changes associated with the following projects targeted for implementation near October/November 2021 timeframe.

Below in section “Business Rules Impacted”, you will find **Yellow highlighted** rules these are for VOM and JOU functionality, this is the baseline rules set implemented for Market Sim. Tentative start date early December 2021.
Winter VOM:

- For Energy, Minimum Load and Startup:
  - Operating and maintenance cost changes used for calculating commitment costs. There will be an effective date for this functionality to consider the new data in the commitment cost calculations.

Winter JOU:

- For EIM resource with shared responsibility:
  - A Generating Resource that is owned by multiple entities; the resource is scheduled and dispatched by CAISO, but two or more Scheduling Coordinators provide the bids for their own shares.

http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx this set may also include updates to rule modifications not tied to a release.

The full set of the Business Rules promoted to Production can be seen under the SIBM user documentation under the Application Access/ in SIBM user documentation for all rules related to SIBM/BSAP/RC-BSAP.

SIBR UI Screen shots
N/A there is no new UI feature for Winter 2021.

SIBR API XML Text/Grid Screen shot
N/A there is no new Tech Spec feature for Winter 2021.
## Revision History for Rules: (11.3.2)

### Version 11.3.2 (highlighted p)

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Changes</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.3.2</td>
<td>9/9/2021</td>
<td>Added terms Energy Operation and Maintenance Cost, Minimum Load Operation and Maintenance Cost, Negotiated O&amp;M Indicator, and Start-Up Operation and Maintenance Cost.</td>
<td>VOM Cost Review</td>
</tr>
<tr>
<td>11.3.2</td>
<td>9/9/2021</td>
<td>Added rule 10089 for VOM Cost Review effective dating functionality.</td>
<td>VOM Cost Review</td>
</tr>
<tr>
<td>11.3.2</td>
<td>9/9/2021</td>
<td>Modified 41129, 41224, 41645, 41652, 41659, 41660, 41662, and 41663 to disable existing cost calculation rules upon activation of the VOM Cost Review policy.</td>
<td>VOM Cost Review</td>
</tr>
<tr>
<td>11.3.2</td>
<td>9/9/2021</td>
<td>Added rules 41136, 41210, and 41666-41671 to enable new cost calculation rules upon activation of the VOM Cost Review policy.</td>
<td>VOM Cost Review</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Changes</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Added Terms Joint Operated Unit, JOU Child Ownership Share, JOU Child Resource, and JOU Parent Resource.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Modified 21018 to support separate Bid Content rules for JOU Parent Resources.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Modified 50001 to support bids for JOU Parent Resources.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Added 21020 to specify Bid Content rules to support bids for JOU Parent Resources.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Added 51064 to specify Bid Generation and Final Processing Rules to allow JOU Child Resources to inherit bid components from the associated JOU Parent Resource.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Modified 41133, 41135, 41230, and 41231 to allow JOU Child Resources to inherit default commitment costs from the associated JOU Parent Resource.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Added 41137 and 41233 to specify Bid Processing rules to allow JOU Child Resources to inherit default commitment costs from the associated JOU Parent Resource.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Modified 41645, 41652, 41659, 41660, 41662, 41663, 41666-41671 to allow JOU Child Resources to inherit reasonableness threshold commitment costs from the associated JOU Parent Resource.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Added 41672 and 41673 to specify Bid Processing rules to allow JOU Child Resources to inherit reasonableness threshold commitment costs from the associated JOU Parent Resource.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Modified 28001 to prohibit Base Schedules for JOU Parent Resources.</td>
<td>JOU Pilot</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Modified 61038, 61039, and 61042 to incorporate new rules into the re-firing list.</td>
<td>JOU Pilot / VOM Cost Review</td>
</tr>
<tr>
<td>11.4.1</td>
<td>10/8/2021</td>
<td>Added 41136, 41210, 41666-41671, 41106-41110, and 41216-41220 to NPM G RF</td>
<td>VOM Cost Review</td>
</tr>
</tbody>
</table>
## Revision of Terms for Summer 2021 Release:

<table>
<thead>
<tr>
<th>Name</th>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Operation and Maintenance Cost</td>
<td>Energy O&amp;M Cost</td>
<td>The portion of the Energy Cost of a Generating Resource that is related to operating and maintenance expenses.</td>
</tr>
<tr>
<td>Minimum Load Operation and Maintenance Cost</td>
<td>Minimum Load O&amp;M Cost</td>
<td>A portion of the Minimum Load Cost of a Generating Resource that is related to operating and maintenance expenses.</td>
</tr>
<tr>
<td>Negotiated O&amp;M Indicator</td>
<td></td>
<td>A registered indicator for each generating resource that indicates whether the resource's Minimum Load and Start-Up O&amp;M Costs are negotiated ('Negotiated') or set to the default ('Default') value.</td>
</tr>
<tr>
<td>Start-Up Operation and Maintenance Cost</td>
<td>Startup O&amp;M Cost</td>
<td>A portion of the Start-Up Cost of a Generating Resource that is related to operating and maintenance expenses.</td>
</tr>
<tr>
<td>Joint Operated Unit</td>
<td>JOU</td>
<td>A Generating Resource that is owned by multiple entities; the resource is scheduled and dispatched by CAISO, but two or more Scheduling Coordinators provide the bids for their own shares.</td>
</tr>
<tr>
<td>JOU Child Ownership Share</td>
<td></td>
<td>The fractional share of the JOU Parent Resource that is owned by the JOU Child Resource.</td>
</tr>
<tr>
<td>JOU Child Resource</td>
<td></td>
<td>A share of the Joint Operated Unit that is bid by a single Scheduling Coordinator.</td>
</tr>
<tr>
<td>JOU Parent Resource</td>
<td></td>
<td>The Joint Operated Unit physical Resource.</td>
</tr>
</tbody>
</table>
Business Rules Impacted – Winter 2021 Release:

Rule changes for the Version 11.3.2 – 11.4.x are located below. Modified Text in red, new rules will be all red and deleted rules in grey ‘DEL’ in market column. This is the baseline rules set implemented for Market Sim. Tentative start date December 2021.

New and Modified rules are as follows: (Detail Summary)

SIBR BR version 11.3.1

<table>
<thead>
<tr>
<th>Market</th>
<th>Business Rule ID</th>
<th>Business Rule Numbering</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>10089</td>
<td>1 0 0 77</td>
<td>The configurable VOM Cost Review Effective Date must be must be initialized to ‘01/01/2022’.</td>
<td>RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($0/start by default). Curve breakpoints must be the same as the breakpoints for the Start-Up Energy Curve and the Start-Up Fuel Curve for that Online Generating Resource State.</td>
</tr>
<tr>
<td>ALL</td>
<td>41129</td>
<td>4 1 1 26</td>
<td>The Proxy Start-Up Cost Curve for an Online Generating Resource State, whether startable or not, in a Generating Resource Bid must be derived as the sum of a) the Start-Up Energy Cost Curve, b) the Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) the Major Maintenance Start-Up Cost Adder, and e) the Grid Management Charge Start-Up Cost Adder, for that Online Generating Resource State of the Generating Resource and Bid Period specified in that Bid, if that Generating Resource is registered with a Start-Up Cost Basis of &quot;Proxy Cost&quot; for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.</td>
<td>RLC: Major Maintenance Start-Up Cost Adder for Generating Resources by Online Generating Resource State ($0/start by default).</td>
</tr>
<tr>
<td>ALL</td>
<td>41136</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
| ALL | 41224 | 4 | 1 | 2 | 27 | The Proxy Minimum Load Cost for an Online Generating Resource State in a Generating Resource Bid must be derived as the sum of a) the Minimum Load Fuel Cost, b) the product of the registered Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) the Major Maintenance Minimum Load Cost Adder, and e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, for that Online Generating Resource State of the Generating Resource and Bid Period specified in that Bid, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date. | MFR: Minimum Load Fuel Cost ($/hr) and Operation and Maintenance Cost ($/MWh) registry by online state for Generating Resources with a Minimum Load Cost Basis of "Proxy Cost". RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online Generating Resource State ($0/MWh by default). RLC: Major Maintenance Minimum Load Cost Adder for Generating Resources by Online Generating Resource State ($0/h by default). RLC: Grid Management Charge Minimum Load Cost Rate ($0/MWh by default).
The Proxy Minimum Load Cost for an Online Generating Resource State in a Generating Resource Bid must be derived as the sum of:

a) the Minimum Load Fuel Cost,
b) the product of the registered Energy Operation and Maintenance Cost and the registered Minimum Load,
c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load,
d) either the Minimum Load Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Minimum Load Operation and Maintenance Cost and the registered Maximum Capacity,

e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, for that Online Generating Resource State of the Generating Resource and Bid Period specified in that Bid, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.

MFR: Minimum Load Fuel Cost ($/hr) and Operation and Maintenance Cost ($/MWh) registry by online state for Generating Resources with a Minimum Load Cost Basis of "Proxy Cost".

RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online Generating Resource State ($0/MWh by default).

MFR: Energy and Minimum Load Operation and Maintenance Cost and Negotiated O&M Indicator registry for Generating Resources.

RLC: Grid Management Charge Minimum Load Cost Rate ($0/MWh by default).
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the Relative Proxy Start-Up Cost Ceiling multiplied by the sum of a) the Start-Up Energy Cost Curve, b) the Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) the Major Maintenance Start-Up Cost Adder, and e) the Grid Management Charge Start-Up Cost Adder, plus the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and if either 1) the Generating Resource is registered as a Natural Gas Resource with a Manual Consult Flag of "NO" for that Bid Period, or 2) the Generating Resource is not registered as a Natural Gas Resource for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($0/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and the Start-Up Fuel Cost Curve for that Online Generating Resource State.

RLC: Major Maintenance Start-Up Cost Adder for Generating Resources by Online Generating Resource State ($0/start by default). Does not apply to resources that have had a gas price revision due to a manual consultation with the ISO.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the sum of a) the Start-Up Energy Cost Curve, b) the Manual Consult Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) the Major Maintenance Start-Up Cost Adder, e) the Grid Management Charge Start-Up Cost Adder, and f) the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "NO" for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($0/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and Start-Up Fuel Cost Curve, or the Start-Up Fuel Curve for that Online Generating Resource State.

RLC: Major Maintenance Start-Up Cost Adder for Generating Resources by Online Generating Resource State ($0/start by default). Applies to resources that had a gas price revision due to a manual consultation with the ISO, but a same day gas price update is not applicable.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the greater of 1) the Relative Proxy Start-Up Cost Ceiling multiplied by the sum of a) the Start-Up Energy Cost Curve, b) the Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) the Major Maintenance Start-Up Cost Adder, and e) the Grid Management Charge Start-Up Cost Adder, or 2) the sum of a) the Start-Up Energy Cost Curve, b) the Manual Consult Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) the Major Maintenance Start-Up Cost Adder, and e) the Grid Management Charge Start-Up Cost Adder, plus the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "YES" for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($0/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and Start-Up Fuel Cost Curve for that Online Generating Resource State.

RLC: Major Maintenance Start-Up Cost Adder for Generating Resources by Online Generating Resource State ($0/start by default). Applies to resources that had a gas price revision due to a manual consultation with the ISO, and a same day gas price update has been applied.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the Relative Proxy Start-Up Cost Ceiling multiplied by the sum of a) the Start-Up Energy Cost Curve, b) the Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) either the Start-Up Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Start-Up Operation and Maintenance Cost and the registered Maximum Capacity, and e) the Grid Management Charge Start-Up Cost Adder, plus the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and if either 1) the Generating Resource is registered as a Natural Gas Resource with a Manual Consult Flag of "NO" for that Bid Period, or 2) the Generating Resource is not registered as a Natural Gas Resource for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($0/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and the Start-Up Fuel Curve for that Online Generating Resource State.

MFR: Start-Up Operation and Maintenance Cost and Negotiated O&M Indicator registry for Generating Resources. Does not apply to resources that have had a gas price revision due to a manual consultation with the ISO.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the sum of:

a) the Start-Up Energy Cost Curve,
b) the Manual Consult Start-Up Fuel Cost Curve,
c) the Greenhouse Gas Start-Up Cost Allowance Curve,
de) either the Start-Up Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Start-Up Operation and Maintenance Cost and the registered Maximum Capacity,
e) the Grid Management Charge Start-Up Cost Adder,
and
f) the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "NO" for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and Start-Up Fuel Curve for that Online Generating Resource State.

MFR: Start-Up Operation and Maintenance Cost and Negotiated O&M Indicator registry for Generating Resources. Applies to resources that had a gas price revision due to a manual consultation with the ISO, but a same day gas price update is not applicable.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the greater of 1) the Relative Proxy Start-Up Cost Ceiling multiplied by the sum of a) the Start-Up Energy Cost Curve, b) the Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) either the Start-Up Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Start-Up Operation and Maintenance Cost and the registered Maximum Capacity, and e) the Grid Management Charge Start-Up Cost Adder, or 2) the sum of a) the Start-Up Energy Cost Curve, b) the Manual Consult Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) either the Start-Up Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Start-Up Operation and Maintenance Cost and the registered Maximum Capacity, and e) the Grid Management Charge Start-Up Cost Adder, plus the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "YES" for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and the Start-Up Fuel Curve for that Online Generating Resource State.

MFR: Start-Up Operation and Maintenance Cost and Negotiated O&M Indicator registry for Generating Resources. Applies to resources that had a gas price revision due to a manual consultation with the ISO, and a same day gas price update has been applied.
<table>
<thead>
<tr>
<th>ALL</th>
<th>41652</th>
<th>4</th>
<th>1</th>
<th>16</th>
<th>1</th>
</tr>
</thead>
</table>

The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the Relative Proxy Minimum Load Cost Ceiling multiplied by the sum of:

1. The Minimum Load Fuel Cost
2. The product of the registered Operation and Maintenance Cost and the registered Minimum Load
3. The product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load
4. The Major Maintenance Minimum Load Cost Adder
5. The product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load

plus the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and if either:

1. The Generating Resource is registered as a Natural Gas Resource with a Manual Consult Flag of "NO" for that Bid Period, or
2. The Generating Resource is not registered as a Natural Gas Resource for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

MFR: Minimum Load Fuel Cost ($/hr) and Operation and Maintenance Cost ($/MWh) registry by online state for Generating Resources with a Minimum Load Cost Basis of "Proxy Cost".

RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online Generating Resource State ($0/MWh by default).

RLC: Major Maintenance Minimum Load Cost Adder for Generating Resources by Online Generating Resource State ($0/h by default).

RLC: Grid Management Charge Minimum Load Cost Rate ($0/MWh by default).

Does not apply to resources that have had a gas price revision due to a manual consultation with the ISO.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the sum of:

- a) the Manual Consult Minimum Load Fuel Cost,
- b) the product of the registered Operation and Maintenance Cost and the registered Minimum Load,
- c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load,
- d) the Major Maintenance Minimum Load Cost Adder,
- e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load,
- f) the Minimum Load Opportunity Cost,

for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "NO" for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

**Abbreviations:**
- **MFR:** Minimum Load Fuel Cost ($/hr) and Operation and Maintenance Cost ($/MWh)
- **RLC:** Greenhouse Gas Minimum Load Cost Allowance for Generating Resources ($0/MWh by default)
- **RLM:** Major Maintenance Minimum Load Cost Adder for Generating Resources ($0/h by default)
- **RLG:** Grid Management Charge Minimum Load Cost Rate ($0/MWh by default)

This applies to resources that have had a gas price revision due to a manual consultation with the ISO, but a same day gas price update is not applicable.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the greater of 1) the Relative Proxy Minimum Load Cost Ceiling multiplied by the sum of a) the Minimum Load Fuel Cost, b) the product of the registered Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) the Major Maintenance Minimum Load Cost Adder, and e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, and 2) the sum of a) the Manual Consult Minimum Load Fuel Cost, b) the product of the registered Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) the Major Maintenance Minimum Load Cost Adder, and e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, plus the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "YES" for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

MFR: Minimum Load Fuel Cost ($/hr) and Operation and Maintenance Cost ($/MWh) registry by online state for Generating Resources with Minimum Load Cost Basis of "Proxy Cost".

RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online Generating Resource State ($0/MWh by default).

RLC: Major Maintenance Minimum Load Cost Adder for Generating Resources by Online Generating Resource State ($0/h by default).

RLC: Grid Management Charge Minimum Load Cost Rate ($0/MWh by default).

Applies to resources that had a gas price revision due to a manual consultation with the ISO, and a same day gas price update has been applied.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the Relative Proxy Minimum Load Cost Ceiling multiplied by the sum of a) the Minimum Load Fuel Cost, b) the product of the registered Energy Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) **either the Minimum Load Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Minimum Load Operation and Maintenance Cost and the registered Maximum Capacity**, and e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, plus the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and if either 1) the Generating Resource is registered as a Natural Gas Resource with a Manual Consult Flag of "NO" for that Bid Period, or 2) the Generating Resource is not registered as a Natural Gas Resource for that Bid Period, **and the Bid Period is on or after the VOM Cost Review Effective Date.**

MFR: Minimum Load Fuel Cost ($/hr) registry by online state for Generating Resources with a Minimum Load Cost Basis of "Proxy Cost".

RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online Generating Resource State ($0/MWh by default).

MFR: Energy and Minimum Load Operation and Maintenance Cost and Negotiated O&M Indicator registry for Generating Resources.

Does not apply to resources that have had a gas price revision due to a manual consultation with the ISO.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the sum of a) the Manual Consult Minimum Load Fuel Cost, b) the product of the registered Energy Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) either the Minimum Load Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Minimum Load Operation and Maintenance Cost and the registered Maximum Capacity, e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, and f) the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "NO" for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.

MFR: Minimum Load Fuel Cost ($/hr) registry by online state for Generating Resources with a Minimum Load Cost Basis of "Proxy Cost".
RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online Generating Resource State ($0/MWh by default).
MFR: Energy and Minimum Load Operation and Maintenance Cost and Negotiated O&M Indicator registry for Generating Resources.

Applies to resources that had a gas price revision due to a manual consultation with the ISO, but a same day gas price update is not applicable.
<table>
<thead>
<tr>
<th>ALL</th>
<th>41671</th>
<th>4</th>
<th>1</th>
<th>16</th>
<th>6</th>
</tr>
</thead>
</table>

The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the greater of:

1. The Relative Proxy Minimum Load Cost Ceiling multiplied by the sum of:
   - The Minimum Load Fuel Cost,
   - The product of the registered Energy Operation and Maintenance Cost and the registered Minimum Load,
   - The product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load,
   - Either the Minimum Load Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Minimum Load Operation and Maintenance Cost and the registered Maximum Capacity,
   - The product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load,

2. The sum of:
   - The Manual Consult Minimum Load Fuel Cost,
   - The product of the registered Operation and Maintenance Cost and the registered Minimum Load,
   - The product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load,
   - Either the Minimum Load Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Minimum Load Operation and Maintenance Cost and the registered Maximum Capacity,
   - The product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load,

plus the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "YES" for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.

MFR: Minimum Load Fuel Cost ($/hr) registry by online state for Generating Resources with Minimum Load Cost Basis of "Proxy Cost".

RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online Generating Resource State ($0/MWh by default).

MFR: Energy and Minimum Load Operation and Maintenance Cost registry for Generating Resources.

Applies to resources that had a gas price revision due to a manual consultation with the ISO, and a same day gas price update has been applied.
SIBR BR version 11.4.1
The following rules have been added or changed:

<table>
<thead>
<tr>
<th>Market</th>
<th>Business Rule ID</th>
<th>Business Rule Numbering</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTM</td>
<td>21018</td>
<td>2 1 0 6</td>
<td>A Generating Resource Bid may include the following if that Generating Resource is not registered as a JOU Parent for the Trading Hour specified in that Bid: 1) at most one Start-Up Bid Component for each registered Online Generating Resource State of the Generating Resource specified in that Bid; 2) at most one Minimum Load Cost Bid Component for each registered Online Generating Resource State; 3) at most one Energy Bid Component for each registered Online Generating Resource State; 4) at most one Self-Schedule Bid Component for each registered Online Generating Resource State; 5) at most one Ancillary Service Bid Component for each registered Online Generating Resource State if and only if the Generating Resource specified in the Bid is NOT registered as a EIM Resource for that Trading Hour; 6) at most one Ramp Rate Bid Component for each registered Online Generating Resource State; 7) at most one Distribution Bid Component; 8) at most one Wheeling Bid Component, if and only if the Generating Resource specified in the Bid is registered as an Inter-Tie Generating Resource for the Trading Hour specified in that Bid; 9) at most one Pumping Bid Component, if and only if the Generating Resource specified in the Bid is registered as a Pump Storage Hydro or a Pump for that Trading Hour; 10) at most one State Transition Bid Component, if and only if the Generating Resource specified in the Bid is registered as a MSG for that Trading Hour; 11) at most one Miscellaneous Bid Component; 12) at most one Greenhouse Gas Bid Component, if and only if that Generating Resource is registered as an EIM Resource with GHG Flag &quot;N&quot; for that Trading Hour; 13) at most one Default Start-Up Bid Adjustment Component for each registered Online Generating Resource State, if and only if that Generating Resource is not registered with a Start-Up Cost Basis of &quot;Registered Cost&quot; for that Trading Hour; 14) at most one Default Minimum Load Bid Adjustment Component for each registered Online Generating Resource State, if and only if that Generating Resource is not registered with a Minimum Load Cost Basis of &quot;Registered Cost&quot; for that Trading Hour; and 15) at most one Default Energy Bid Adjustment Component for each registered Online Generating Resource State, if and only if the Calculated Energy Bid Origin for that Online Generating Resource State of that Generating Resource and Trading Hour is not set to &quot;HYDRO_BASED&quot;.</td>
<td>MFR: GHG Flag registration for Resources; JOU Parent registration for Generating Resources. ECIC: Calculated Energy Origin for every Generating Resource.</td>
</tr>
<tr>
<td>RTM</td>
<td>21020</td>
<td>2 1 0 7</td>
<td>A Generating Resource Bid may only include one Start-Up Bid Component for each registered Online Generating Resource State of the Generating Resource specified in that Bid, if that Generating Resource is registered as a JOU Parent for the Trading Hour specified in that Bid. [GREG – should we add rules to generate a JOU parent bid if they do not submit one?]</td>
<td>MFR: JOU Parent Resource registration for Generating Resources.</td>
</tr>
<tr>
<td>BS</td>
<td>28001</td>
<td>2</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>-----</td>
<td>-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>ALL</td>
<td>41133</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ALL</td>
<td>41135</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
The Default Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, in a Generating Resource Bid for a Generating Resource registered as a JOU Child Resource for that Bid Period is the Default Start-Up Bid Curve for the equivalent Online Generating Resource State in the Generating Resource Bid of the associated JOU Parent Resource for that Bid Period, multiplied by the JOU Child Ownership Share of that JOU Child Resource for that Bid Period.

Decompose Default SUC from JOU Parent to JOU Child.

The Default Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be the product of the Relative Proxy Minimum Load Cost Ceiling and the Proxy Minimum Load Cost for that Online Generating Resource State of that Generating Resource and Bid Period, plus the Minimum Load Opportunity Cost for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period, that Generating Resource is not registered as a JOU Child Resource for that Bid Period, and if either 1) the Generating Resource is registered as a Natural Gas Resource with a Manual Consult Flag of "NO" for that Bid Period, or 2) the Generating Resource is not registered as a Natural Gas Resource for that Bid Period.

Minimum Load Cost capped by the Relative Proxy Minimum Load Cost Ceiling plus the Minimum Load Opportunity Cost. Does not apply to resources that have had a gas price revision due to a manual consultation with the ISO.

The Default Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be the sum of the Proxy Minimum Load Cost for that Online Generating Resource State of that Generating Resource and Bid Period and the Minimum Load Opportunity Cost for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" for that Bid Period, and is not registered as a JOU Child Resource for that Bid Period.

Minimum Load Cost capped by the Relative Proxy Minimum Load Cost Ceiling plus the Minimum Load Opportunity Cost. Applies to resources that have had a gas price revision due to a manual consultation with the ISO.


Decompose Default MLC from JOU Parent to JOU Child.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the Relative Proxy Start-Up Cost Ceiling multiplied by the sum of a) the Start-Up Energy Cost Curve, b) the Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) the Major Maintenance Start-Up Cost Adder, and e) the Grid Management Charge Start-Up Cost Adder, plus the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and if either 1) the Generating Resource is registered as a Natural Gas Resource with a Manual Consult Flag of "NO" for that Bid Period, or 2) the Generating Resource is not registered as a Natural Gas Resource for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($0/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and the Start-Up Fuel Cost Curve or the Start-Up Fuel Curve for that Online Generating Resource State.

RLC: Major Maintenance Start-Up Cost Adder for Generating Resources by Online Generating Resource State ($0/start by default).

Does not apply to resources that have had a gas price revision due to a manual consultation with the ISO.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the sum of a) the Start-Up Energy Cost Curve, b) the Manual Consult Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) the Major Maintenance Start-Up Cost Adder, e) the Grid Management Charge Start-Up Cost Adder, and f) the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "NO" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($0/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and the Start-Up Fuel Curve for that Online Generating Resource State.

RLC: Major Maintenance Start-Up Cost Adder for Generating Resources by Online Generating Resource State ($0/start by default).

Applies to resources that had a gas price revision due to a manual consultation with the ISO, but a same day gas price update is not applicable.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the greater of 1) the Relative Proxy Start-Up Cost Ceiling multiplied by the sum of a) the Start-Up Energy Cost Curve, b) the Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) the Major Maintenance Start-Up Cost Adder, and e) the Grid Management Charge Start-Up Cost Adder, or 2) the sum of a) the Start-Up Energy Cost Curve, b) the Manual Consult Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) the Major Maintenance Start-Up Cost Adder, and e) the Grid Management Charge Start-Up Cost Adder, plus the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "YES" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($0/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and the Start-Up Fuel Curve for that Online Generating Resource State.

RLC: Major Maintenance Start-Up Cost Adder for Generating Resources by Online Generating Resource State ($0/start by default).

Applies to resources that had a gas price revision due to a manual consultation with the ISO, and a same day gas price update has been applied.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the Relative Proxy Start-Up Cost Ceiling multiplied by the sum of a) the Start-Up Energy Cost Curve, b) the Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) either the Start-Up Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Start-Up Operation and Maintenance Cost and the registered Maximum Capacity, and e) the Grid Management Charge Start-Up Cost Adder, plus the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and if either 1) the Generating Resource is registered as a Natural Gas Resource with a Manual Consult Flag of "NO" for that Bid Period, or 2) the Generating Resource is not registered as a Natural Gas Resource for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Online Generating Resource State ($0/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and the Start-Up Fuel Cost Curve or the Start-Up Fuel Curve for that Online Generating Resource State.

MFR: Start-Up Operation and Maintenance Cost and Negotiated O&M Indicator registry for Generating Resources. Does not apply to resource that have had a gas price revision due to a manual consultation with the ISO.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the sum of a) the Start-Up Energy Cost Curve, b) the Manual Consult Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) either the Start-Up Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Start-Up Operation and Maintenance Cost and the registered Maximum Capacity, e) the Grid Management Charge Start-Up Cost Adder, and f) the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "NO" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.

RLC: Greenhouse Gas Start-Up Cost Allowance Curve for Generating Resources by Generating Resource State ($0/start by default). The curve breakpoints must be the same as the breakpoints of the Start-Up Energy Curve and the Start-Up Fuel Cost Curve or the Start-Up Fuel Curve for that Online Generating Resource State.

MFR: Start-Up Operation and Maintenance Cost and Negotiated O&M Indicator registry for Generating Resources. Applies to resources that had a gas price revision due to a manual consultation with the ISO, but a same day gas price update is not applicable.
The Reasonableness Threshold Start-Up Bid Curve for an Online Generating Resource State, whether startable or not, of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the greater of 1) the Relative Proxy Start-Up Cost Ceiling multiplied by the sum of a) the Start-Up Energy Cost Curve, b) the Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) either the Start-Up Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Start-Up Operation and Maintenance Cost and the registered Maximum Capacity, and e) the Grid Management Charge Start-Up Cost Adder, or 2) the sum of a) the Start-Up Energy Cost Curve, b) the Manual Consult Start-Up Fuel Cost Curve, c) the Greenhouse Gas Start-Up Cost Allowance Curve, d) either the Start-Up Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Start-Up Operation and Maintenance Cost and the registered Maximum Capacity, and e) the Grid Management Charge Start-Up Cost Adder, plus the Start-Up Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Start-Up Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "YES" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the Relative Proxy Minimum Load Cost Ceiling multiplied by the sum of a) the Minimum Load Fuel Cost, b) the product of the registered Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) the Major Maintenance Minimum Load Cost Adder, and e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, plus the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and if either 1) the Generating Resource is registered as a Natural Gas Resource with a Manual Consult Flag of "NO" for that Bid Period, or 2) the Generating Resource is not registered as a Natural Gas Resource for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

MFR: Minimum Load Fuel Cost ($/hr) and Operation and Maintenance Cost ($/MWh)
RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online State for Generating Resources with a Minimum Load Cost Basis of "Proxy Cost".
RLC: Major Maintenance Minimum Load Cost Adder for Generating Resources by Online State ($0/h by default).
RLC: Grid Management Charge Minimum Load Cost Rate ($0/MWh by default).

Does not apply to resource that have had a gas price revision due to a manual consultation with the ISO.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the sum of:

- a) the Manual Consult Minimum Load Fuel Cost, 
- b) the product of the registered Operation and Maintenance Cost and the registered Minimum Load, 
- c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, 
- d) the Major Maintenance Minimum Load Cost Adder, 
- e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, and 
- f) the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "NO" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.

MFR: Minimum Load Fuel Cost ($/hr) and Operation and Maintenance Cost ($/MWh) registry by online state for Generating Resources with a Minimum Load Cost Basis of "Proxy Cost".

RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online Generating Resource State ($0/MWh by default).

RLC: Major Maintenance Minimum Load Cost Adder for Generating Resources by Online Generating Resource State ($0/h by default).

RLC: Grid Management Charge Minimum Load Cost Rate ($0/MWh by default). Applies to resources that had a gas price revision due to a manual consultation with the ISO, but a same day gas price update is not applicable.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the greater of 1) the Relative Proxy Minimum Load Cost Ceiling multiplied by the sum of a) the Minimum Load Fuel Cost, b) the product of the registered Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) the Major Maintenance Minimum Load Cost Adder, and e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, and 2) the sum of a) the Manual Consult Minimum Load Fuel Cost, b) the product of the registered Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) the Major Maintenance Minimum Load Cost Adder, and e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, plus the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "YES" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and the Bid Period is prior to the VOM Cost Review Effective Date.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the Relative Proxy Minimum Load Cost Ceiling multiplied by the sum of:

a) the Minimum Load Fuel Cost,
b) the product of the registered Energy Operation and Maintenance Cost and the registered Minimum Load,
c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load,
d) the product of the Minimum Load Operation and Maintenance Cost and the negotiated Minimum Load Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Energy Operation and Maintenance Cost and the registered Maximum Capacity, and

e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, plus the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and if either 1) the Generating Resource is registered as a Natural Gas Resource with a Manual Consult Flag of "NO" for that Bid Period, or 2) the Generating Resource is not registered as a Natural Gas Resource for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the sum of a) the Manual Consult Minimum Load Fuel Cost, b) the product of the registered Energy Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) either the Minimum Load Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Minimum Load Operation and Maintenance Cost and the registered Maximum Capacity, e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, and f) the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "NO" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.

MFR: Minimum Load Fuel Cost ($/hr) registry by online state for Generating Resources with a Minimum Load Cost Basis of "Proxy Cost".
RLC: Greenhouse Gas Minimum Load Cost Allowance for Generating Resources by Online Generating Resource State ($0/MWh by default).
MFR: Energy and Minimum Load Operation and Maintenance Cost and Negotiated O&M Indicator registry for Generating Resources.

Applies to resources that had a gas price revision due to a manual consultation with the ISO, but a same day gas price update is not applicable.
The Reasonableness Threshold Minimum Load Bid for an Online Generating Resource State of a Generating Resource and Bid Period in a Generating Resource Bid must be derived as the greater of 1) the Relative Proxy Minimum Load Cost Ceiling multiplied by the sum of a) the Minimum Load Fuel Cost, b) the product of the registered Energy Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) either the Minimum Load Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Minimum Load Operation and Maintenance Cost and the registered Maximum Capacity, and e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, and 2) the sum of a) the Manual Consult Minimum Load Fuel Cost, b) the product of the registered Operation and Maintenance Cost and the registered Minimum Load, c) the product of the Greenhouse Gas Minimum Load Cost Allowance and the registered Minimum Load, d) either the Minimum Load Operation and Maintenance Cost, if the Negotiated O&M Indicator is "Negotiated", or else the product of the Minimum Load Operation and Maintenance Cost and the registered Maximum Capacity, and e) the product of the Grid Management Charge Minimum Load Cost Rate and the registered Minimum Load, plus the Minimum Load Opportunity Cost, for that Online Generating Resource State of that Generating Resource and Bid Period, if that Generating Resource is registered with a Minimum Load Cost Basis of "Proxy Cost" for that Bid Period and is a Natural Gas Resource with a Manual Consult Flag of "YES" and a Fuel Region Update Flag of "YES" for that Bid Period, is not registered as a JOU Child Resource for that Bid Period, and the Bid Period is on or after the VOM Cost Review Effective Date.


A Valid Bid or a Modified Bid must be promoted to a Clean Bid, unless that Bid is a Generating Resource Bid for a Generating Resource registered as a JOU Parent Resource for the Bid Period specified in that Bid.
<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTM</td>
<td>51064</td>
<td>5 1 0</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAM</td>
<td>61038</td>
<td>6 1 0</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPM</td>
<td>61042</td>
<td>6 1 0</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


If there is a change to the Day-Ahead registered Gas Price Index for a Generating Resource and Trading Day or to the Day-Ahead registered Reasonableness Threshold Gas Price Index for a Generating Resource and Trading Day, the Bid Processing rules for gas prices, commitment cost and commitment cost adjustment must refire for all Generating Resource Bids for that Generating Resource and Trading Day.

JOU Child Resources inherit Start-Up Time values from JOU Parent Resource.


The full set of the Business Rules can be seen under SIBR user documentation under the Application Access/ in SIBR user documentation for all rules related to SIBR/BSAP/RC-BSAP.


END Document