



# **MRTU Interface Specification for Bidding Services**

(IMS Update 2 Business Rules v 3.9.14.6)

Version: 2.3

October 14, 2008

## Revision History

| Date     | Version | By        | Description   |
|----------|---------|-----------|---|
| 10/14/08 | 2.3     | WT/       | <p><b>New Namespace for RawBidSet, BidResults, and CleanBidSet XSD and associated WSDLs</b></p> <p><b>Added Bid Status' "S" and "SO"</b></p>  |
| 10/1/08  | 2.2     | WT/<br>DC | <p>New Namespace for RawBidSet, BidResults, and CleanBidSet XSD and associated WSDLs</p> <p>Enumeration added for 'RMT' ReferenceType</p> <p>Removed ETP/TOP SelfSchedule Types</p> <p>Updated Contingency Flag Element Description</p>   |
| 9/11/08  | 2.1.1   | WT/<br>DC | <p>Updates to the Element tables associated with the RawBidSet.</p> <p>Bid Limit notation added for the SIBR application, not specific to any XSD limit.</p> <p>BidResults.xsd [Added escape character to pattern for BidPriceCurve/CurveSchedData/y1AxisData]</p>  |
| 9/11/08  | 2.1.2   | WT        | <p>Updated namespace for retrieveCurrentBidResults.wsdl and retrieveCleanBidSet.wsdl</p>  |
| 8/19/08  | 2.1     | WT        | <p>Update to: (these can only be used with SIBR BR set 3.9.14.3 or higher ( SIBR CR4+ release))</p> <p>submitRawBidSet.wsdl</p> <p>RawBidSet.xsd</p> <p>retrieveCurrentBidResults.wsdl</p> <p>retrieveCurrentBidResults_DocAttach.wsdl</p> <p>RequestBidResults.xsd</p> <p>BidResults.xsd</p> <p>retrieveCleanBidSet.wsdl</p> <p>retrieveCleanBidSet_DocAttach.wsdl</p> <p>RequestCleanBidSet.xsd</p> |

|          |       |          |   |
|----------|-------|----------|---|
|          |       |          | <p>CleanBidSet.xsd</p> <p>Element data and example xml files updated with new versions.</p> <p>All xml examples for bid submission and retrieves will be placed into a reference file separate from this specification. It will be enhanced to include more examples and specific products in relation to schedule types.</p> |
| 4/2/08   | 1.9.2 | WT       | Update to Submit Raw Bid Set Element table, Example RawBidSet.xml files, WSDL retrieveCleanBidSet.wsdl, RequestCleanBidSet.xsd, CleanBidSet.xsd, Example CleanBidSet.xml, Example BidResults.xml  |
| 2/29/08  | 1.9.1 | WT       | Added comment to "IFM" Self-Sched Type in the CleanBidSet.xsd for internal use SIBR -> RTM  |
| 1/25/08  | 1.9   | WT       | Added Section 1.3 for Release notes for xsd wsdl changes<br>Updated BidResults.xsd, RawBidSet.xsd, CleanBidSet.xsd,   |
| 11/20/07 | 1.8   | WT       | Updated for IMS Update 2, WSDL and XSD changes.   |
| 10/18/07 | 1.7   | WT       | This version provided for IMS R3 Update 1 posting. SIBR BR (3.9.11.5)   |
| 9/28/07  | 1.6   | WT       | Updated date formats in examples for RTM and GMT offsets that were not correct.   |
| 8/29/07  | 1.5   | WT       | Updated LOF, LFD/U information in examples  |
| 7/20/07  | 1.4   | WT       | Added some clarity to bidding ProdType – SSType, and RetrieveCleanBid, RetrieveCurrentBidResult Web service   |
| 2/23/07  | 1.3   | WT       | Updated for Release 5 WSDLs and XSDs (see Appendix – Changes to XSD Files – ver 1.3)  |
| 12/20/06 | 1.2   | DC       | Updated for Release 4 WSDLs and XSDs (see Appendix - Changes to XSD Files – ver 1.2)  |
| 6/30/06  | 1.1   | PM<br>VM | Updated for Release 3 WSDLs and XSDs (see Appendix – Changes to XSD Files – ver 1.1).   |
| 5/31/06  | 1.0   | PM       | 1 <sup>st</sup> released version.   |

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# 1 Introduction

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## 1.1 Purpose

This document describes the Market Participant interface to CAISO's MRTU Bidding Services. It provides the WSDL, XSD, and XML information required by application programmers to create and send messages and to process response messages.

## 1.2 Contact Information

For any questions regarding this document or technical questions related to integrating applications with CAISO's MRTU web services, please send email to  
[MRTUImplementation@caiso.com](mailto:MRTUImplementation@caiso.com) <<mailto:MRTUImplementation@caiso.com>>

## 1.3 Release Notes for Bidding Services version 2.3

There are several variances logged during the Market Simulation for Update 2 that require changes to several xsd's in order to resolve.

The following xsd's require changes:

- BidResults.xsd
- CleanBidSet.xsd
- 1. MQC #15860 - Addition of bid status and trade status 'S' and 'SO', plus "clean-up" of bid/trade status enumeration:
  - BidResults (BidResult.xsd, WSDLs for retrieve service)
  - CleanBid (CleanBidSet.xsd, WSDLs for broadcast/receive/retrieve services)

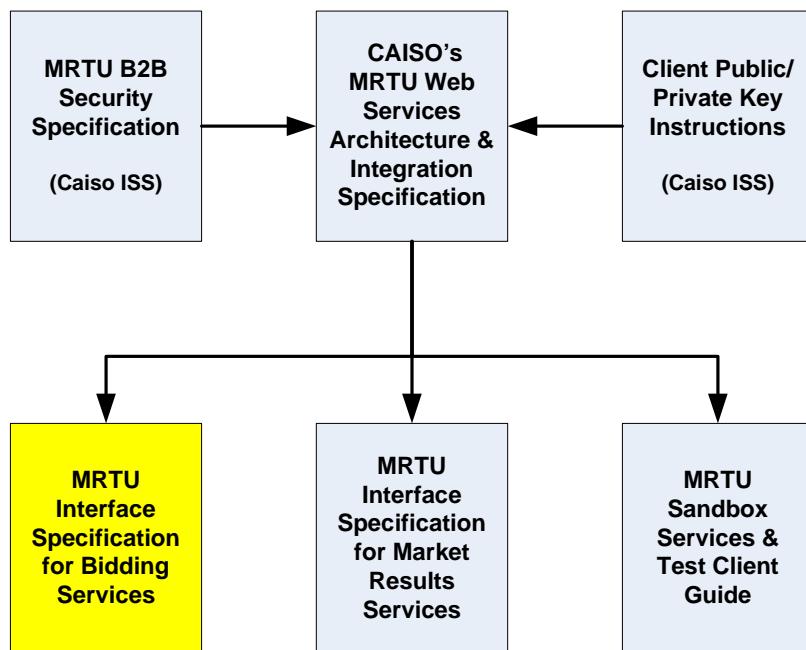
## 1.4 Namespace Matrix

| TargetNamespace (wsdl)                    | XmIns (xsd)                            |
|---|--|
| 2008-08-10/submitRawBidSet.wsdl           | 2008-08-10/RawBidSet.xsd               |
|   | 2006-06-13/StandardAttachmentInfor.xsd |
|   | 2006-06-13/SubmitStandardOutput.xsd    |
|   | 2006-06-13/StandardOutput.xsd          |
| 2008-08-11/retrieveCurrentBidResults.wsdl | 2008-08-11/BidResult.xsd               |
|   | 2008-05-21/RequestBidResults.xsd       |
|   | 2006-06-13/StandardAttachmentInfor.xsd |

|                                     |  |
|-------------------------------------|--|
|                                     | 2006-06-13/StandardOutput.xsd          |
|                                     |  |
| 2008-08-11/retrieveCleanBidSet.wsdl | 2008-08-11/CleanBidSet.xsd             |
|                                     | 2008-05-21/RequestCleanBidSet.xsd      |
|                                     | 2006-06-13/StandardAttachmentInfor.xsd |
|                                     | 2006-06-13/StandardOutput.xsd          |

## 1.5 Related Documents

CAISO's MRTU program has produced a set of documents describing its web services architecture and associated interfaces to the Bidding, Market Results, and Sandbox Services. *CASIO's MRTU Web Services Architecture & Integration Specification* is the top-level document in this set; Market Participants and their application programmers should read this document to gain an overall understanding of CAISO's web services architecture prior to reading any of the detailed documents shown below.



**Figure 1 – MRTU Web Services Interface Specification Document Set**

The MRTU Web Services Interface Specification Document Set is available online at the locations indicated below.



| Doc. No. | Document Name                               | Location  |
|----------|---|---|
| 1        | MRTU B2B Security Specification             | <a href="http://www.caiso.com/docs/2005/09/16/200509161107599757.pdf">http://www.caiso.com/docs/2005/09/16/200509161107599757.pdf</a> |
| 2        | Client Public/Private Key Instructions      | <a href="http://www.caiso.com/14cf/14cf687f315c0.pdf">http://www.caiso.com/14cf/14cf687f315c0.pdf</a>                                 |
| 3        | MRTU Technical Documentation                | <a href="http://www.caiso.com/17ba/17baa96f22110.html">http://www.caiso.com/17ba/17baa96f22110.html</a>                               |
| 4        | MRTU Sandbox Services and Test Client Guide | <a href="http://www.caiso.com/17bf/17bf9e393f990.html">http://www.caiso.com/17bf/17bf9e393f990.html</a>                               |

## 2 Submit Raw Bid

---

### 2.1 Business Scenario

Scheduling Coordinators submit bid data, trading and scheduling activity data on behalf of market participants who wish to participate in the CAISO Day Ahead and Real Time markets. While some Scheduling Coordinators submit their bid data through the SIBR portal manually, most Scheduling Coordinators submit their bid data in batch mode through an automated process.

To meet the needs for submission of raw bid data from Scheduling Coordinators, two processes can be followed for manual and batch mode, respectively:

1) Portal Process

In this process the submission is made via a CAISO Web Portal. Scheduling Coordinators submit bid data through the portal automatically using a proxy application implemented at the portal. The proxy will send the data to SIBR for submission. Using the SIBR portal, Scheduling Coordinators can upload XML files, submit bids, and submit bids via portfolios, which is a collection of bids created by the user and saved for submittal at a later time.

2) Direct Link Process

In this case, a Scheduling Coordinator directly invokes the submitRawBidSet service that resides in CAISO domain using a security mechanism. This process involves submitting raw bid xml payloads via the CAISO web service interface, but does not preclude the use of a client application for automating the process of invoking the web service

The direct link can only be established if a Scheduling Coordinator application knows the concrete information to invoke the SIBR raw bid submit Web service. Since a Scheduling Coordinator application is usually outside of the CAISO firewall, a certain security mechanism shall be implemented for the process. The Scheduling Coordinator applications shall be also responsible for an XML validation prior to a data submission.

## 2.2 Service Level Agreement

The following service level agreement defines the business and technical requirements for service availability and performance.

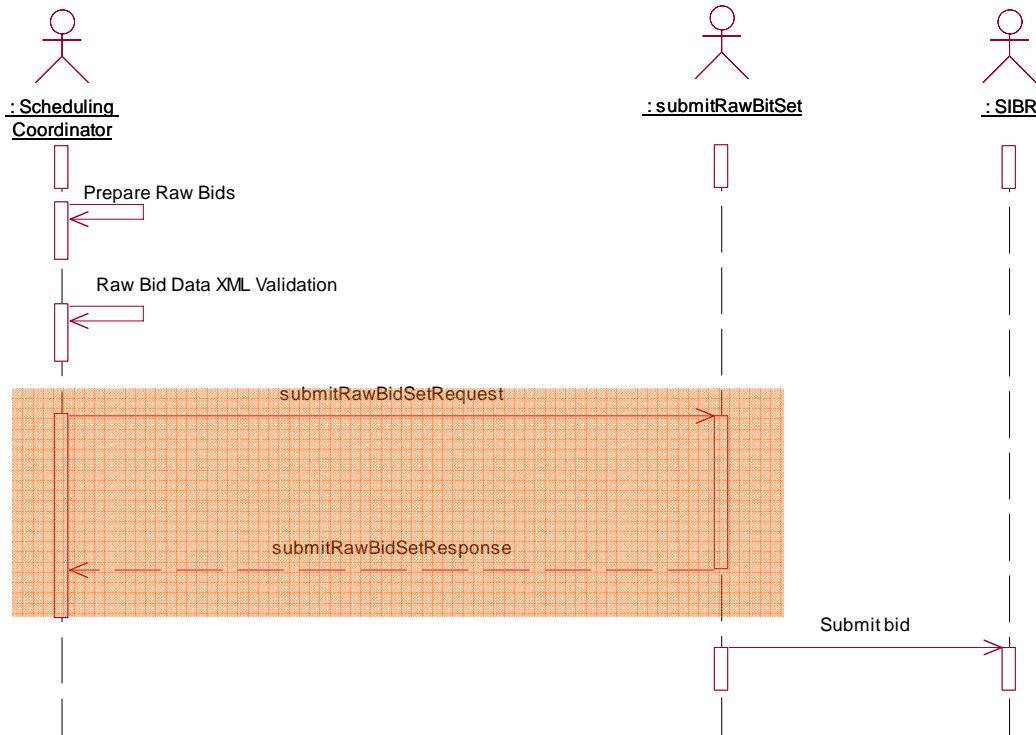
|  |   |
|--|---|
| <b>Service availability</b>  | Service level goal is 99.9%.  |
| <b>Expected size of payload (average and maximum)</b>                          | (AVG # of bids) to (500+ maximum bids) times size of one bid.   |
| <b>Expected frequency (average and maximum)</b>                                | At least once an hour per Schedule Coordinator utilizing the service for RTM, and several times prior to DAM closing 10:00 AM per SC. |
| <b>Longest time the service can be unavailable before business is impacted</b> | [to be determined]  |
| <b>Business impact if is unavailable</b>                                       | Schedule Coordinators utilizing the service may not complete submitting all their bids  |
| <b>Expected response time for the service</b>                                  | [to be determined]  |
| <b>Expected time to exchange</b>   | [to be determined]  |

## 2.3 Use Model

The sequence diagram below describes the service interactions between Scheduling Coordinators and SIBR system in a direct link submission process. The data exchange follows CAISO SOA Submit messaging pattern. In this pattern, the data source system is the Scheduling Coordinator who initiates a data transaction by invoking a submitRawBidSet service provided by SIBR. The consumer of the Web service is Scheduling Coordinator or a Web portal. The consumer makes request to SIBR with raw bid data by invoking the submit Web service. The SIBR system is the provider of the Web service.

The following steps are involved in the submission process:

- 1) Scheduling Coordinator has the raw bid data set ready in XML format
- 2) Scheduling Coordinator validates the data set based on the XML schema
- 3) Scheduling Coordinator invokes the submitRawBidSet Web service directly to send a request to SIBR with the raw bid data set
- 4) SIBR returns an acknowledge message back to Scheduling Coordinator.



## 2.4 Operation Details

The service has one operation with three message types. All input and output messages are in XML format.

| Operation       | Message Types | Message                  | WSDL                 | XSD                      |
|-----------------|---------------|--------------------------|----------------------|--------------------------|
| submitRawBidSet | Input         | SubmitRawBidSet Request  | submitRawBidSet.wsdl | submitRawBidSet.xsd      |
|                 | Output        | SubmitRawBidSet Response |                      | SubmitStandardOutput.xsd |
|                 | Fault         | faultReturnType          |                      | StandardOutput.xsd       |

## 2.5 WSDL (submitRawBidSet.wsdl)

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions
    xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
    xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns="http://schemas.xmlsoap.org/wsdl/"
    xmlns:wsi="http://ws-i.org/schemas/conformanceClaim/"

    xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
    xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
    xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"

    targetNamespace="http://www.caiso.com/soa/2008-08-10/submitRawBidSet.wsdl"
    xmlns:tns="http://www.caiso.com/soa/2008-08-10/submitRawBidSet.wsdl"

    xmlns:schemaInfor="http://www.caiso.com/soa/2008-08-10/RawBidSet.xsd"

    xmlns:typeIn="http://www.caiso.com/soa/2006-06-13/StandardAttachmentInfor.xsd"
    xmlns:typeOut="http://www.caiso.com/soa/2006-06-13/SubmitStandardOutput.xsd"
    xmlns:typeFault="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">

    <wsdl:documentation>
        A web service for submission of raw bid data set from SC and implemented at SIBR
        system side
    </wsdl:documentation>

    <!-- type elements define data types used in this wsdl document using xml schema -->
    <!-- note the namespaces defined matched up with the typeIn and typeOut defined
    above -->
    <wsdl:types>
        <xsschema>
            <xss:import namespace="http://www.caiso.com/soa/2006-06-
13/StandardAttachmentInfor.xsd" schemaLocation="StandardAttachmentInfor.xsd" />
        </xsschema>
        <xsschema>
            <xss:import namespace="http://www.caiso.com/soa/2006-06-
13/SubmitStandardOutput.xsd" schemaLocation="SubmitStandardOutput.xsd" />
        </xsschema>
    </wsdl:types>
```

```
<xs:schema>
  <xs:import namespace="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd"
schemaLocation="StandardOutput.xsd" />
</xs:schema>
</wsdl:types>

<!-- message elements define input and output parameters -->
<!-- a request and response case to use the data type defined in TYPE for payload -->
<wsdl:message name="submitRawBidSetHeader">
  <!-- attachment wrapper -->
  <wsdl:part name="standardAttachmentInfor"
element="typeIn:standardAttachmentInfor">
    <wsdl:documentation>attachment information</wsdl:documentation>
  </wsdl:part>
</wsdl:message>
<wsdl:message name="submitRawBidSetRequest">
  <wsdl:part name="rawBidSet_attachment" type="xs:base64Binary">
    <wsdl:documentation>submit raw bid set</wsdl:documentation>
  </wsdl:part>
</wsdl:message>
<wsdl:message name="submitRawBidSetResponse">
  <wsdl:part name="returnData" type="typeOut:outputDataType">
    <wsdl:documentation>acknowledge raw bid set submitted</wsdl:documentation>
  </wsdl:part>
</wsdl:message>
<wsdl:message name="faultReturnType">
  <wsdl:part name="faultReturn" element="typeFault:outputDataType">
    <wsdl:documentation>fault information</wsdl:documentation>
  </wsdl:part>
</wsdl:message>

<!-- portType elements define the abstract interface of a web service -->
<!-- to use the message type defined in message above -->
<wsdl:portType name="SubmitRawBidSet">
  <wsdl:operation name="submitRawBidSet">
    <wsdl:documentation>submit raw bid set</wsdl:documentation>
    <wsdl:input message="tns:submitRawBidSetRequest" />
    <wsdl:output message="tns:submitRawBidSetResponse" />
    <wsdl:fault name="faultReturn" message="tns:faultReturnType" />
  </wsdl:operation>
</wsdl:portType>
```

```
<!-- binding elements define protocols and encoding styles -->
<!-- to bind the operation defined in portType -->
<wsdl:binding name="SubmitRawBidSet_Binding" type="tns:SubmitRawBidSet">
  <soap:binding style="rpc"
    transport="http://schemas.xmlsoap.org/soap/http"/>
  <wsdl:operation name="submitRawBidSet">
    <soap:operation style="rpc"
      soapAction="http://www.caiso.com/soa/2008-08-10/submitRawBidSet"/>
    <wsdl:input>
      <mime:multipartRelated>
        <mime:part>
          <soap:body use="literal" namespace="http://www.caiso.com/soa/2008-08-10/submitRawBidSet"/>
        </mime:part>
        <mime:part>
          <mime:content part="rawBidSet_attachment"
            type="application/octetstream"/>
        </mime:part>
      </mime:multipartRelated>
      <soap:header message="tns:submitRawBidSetHeader"
        part="standardAttachmentInfor" use="literal"
        wsdl:required="true"/>
    </wsdl:input>
    <wsdl:output>
      <soap:body use="literal" namespace="http://www.caiso.com/soa/2008-08-10/submitRawBidSet"/>
    </wsdl:output>
    <wsdl:fault name="faultReturn">
      <soap:fault name="faultReturn" use="literal"/>
    </wsdl:fault>
  </wsdl:operation>
</wsdl:binding>

<wsdl:service name="SubmitRawBidSetService">
  <wsdl:port name="submitRawBidSetServicePort"
    binding="tns:SubmitRawBidSet_Binding">
    <soap:address location="http://www.caiso.com/soa/2008-08-10/submitRawBidSet"/>
  </wsdl:port>
```

</wsdl:service>

</wsdl:definitions>

## 2.6 Standard Attachment Information

The attachment information schema, StandardAttachmentInfor.xsd, is used to provide general information for an SOAP attachment. The root element in the schema is *standardAttachmentInfor*, which can contain one or more attachment elements.

### 2.6.1 Element table

| Element                | Data Description   | Type     | Req'd |
|------------------------|--|----------|-------|
| id                     | Globally unique identifier.  | string   | No    |
| name                   | Attachment filename.   | string   | No    |
| description            | Description of attachment.   | string   | No    |
| version                | Version ID of attachment file  | string   | No    |
| sequenceNumber         | Sequence number if there are multiple attachments.                   | string   | No    |
| type                   | Attachment file type, such as zip or jpeg.                           | string   | No    |
| size                   | Size of attachment file.   | string   | No    |
| source                 | Source of attachment file.   | string   | No    |
| tool                   | Tool used to generate attachment.                                    | string   | No    |
| creationTime           | Time attachment file was created.                                    | dateTime | No    |
| compressFlag           | Indicates whether or not attachment has been compressed (YES or NO). | string   | No    |
| compressMethod         | Compress method used (if attachment file compressed).                | string   | No    |
| AttributeList.Sequence | Attribute list sequence number.                                      | string   | No    |
| AttributeList.Name     | Name of an attribute   | string   | No    |
| AttributeList.Value    | Value of an attribute  | string   | No    |

## 2.6.2 Schema (StandardAttachmentInfor.xsd)

```
<?xml version="1.0" encoding="UTF-8" ?>
<xs:schema xmlns:m="http://www.caiso.com/soa/2006-06-
13/StandardAttachmentInfor.xsd"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.caiso.com/soa/2006-06-
13/StandardAttachmentInfor.xsd" elementFormDefault="qualified">
  <xs:element name="standardAttachmentInfor"
    type="m:standardAttachmentInfor" />
  <xs:complexType name="standardAttachmentInfor">
    <xs:sequence>
      <xs:element name="Attachment" type="m:Attachment"
        maxOccurs="unbounded" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="Attachment">
    <xs:sequence>
      <xs:element name="id" type="xs:string" minOccurs="0" />
      <xs:element name="name" type="xs:string" minOccurs="0" />
      <xs:element name="description" type="xs:string"
        minOccurs="0" />
      <xs:element name="version" type="xs:string" minOccurs="0"
        />
      <xs:element name="sequenceNumber" type="xs:string"
        minOccurs="0" />
      <xs:element name="type" type="xs:string" minOccurs="0" />
      <xs:element name="size" type="xs:string" minOccurs="0" />
      <xs:element name="source" type="xs:string" minOccurs="0" />
      <xs:element name="tool" type="xs:string" minOccurs="0" />
      <xs:element name="creationTime" type="xs:dateTime"
        minOccurs="0" />
      <xs:element name="compressFlag" type="m:compressFlag"
        minOccurs="0" />
      <xs:element name="compressMethod" type="xs:string"
        minOccurs="0" />
      <xs:element name="AttributeList" type="m:AttributeList"
        minOccurs="0" maxOccurs="unbounded" />
    </xs:sequence>
  </xs:complexType>
  <xs:simpleType name="compressFlag">
    <xs:restriction base="xs:string">
      <xs:enumeration value="yes" />
      <xs:enumeration value="no" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="AttributeList">
    <xs:sequence>
      <xs:element name="Sequence" type="xs:string" minOccurs="0"
        />
      <xs:element name="Name" type="xs:string" minOccurs="0" />
      <xs:element name="Value" type="xs:string" minOccurs="0" />
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```



### 2.6.3 Example XML File (StandardAttachmentInfor.xml)

```
<?xml version="1.0" encoding="UTF-8" ?>
<!--
Sample XML file generated by XMLSpy v2006 U (http://www.altova.com)
-->
<standardAttachmentInfor xmlns="http://www.caiso.com/soa/2006-06-
13/StandardAttachmentInfor.xsd"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://www.caiso.com/soa/2006-06-
13/StandardAttachmentInfor.xsd">
<Attachment>
    <id> 15798563(assigned by SIBR)</id>
    <name>GWED_11</name>
    <description>BID_ATTACHMENT</description>
    <version>1.1</version>
    <sequenceNumber>12</sequenceNumber>
    <type>ZIP</type>
    <size>180</size>
    <source>GWED</source>
    <tool>GZIP</tool>
    <creationTime>2006-06-17T09:30:47.0Z</creationTime>
    <compressFlag>yes</compressFlag>
    <compressMethod>ZIP</compressMethod>
    <AttributeList>
        <Sequence>2</Sequence>
        <Name>GWED</Name>
        <Value>1</Value>
    </AttributeList>
</Attachment>
</standardAttachmentInfor>
```

## 2.7 Submit Raw Bid Set

### 2.7.1 Element Table

| Element                    | Data Description  | Type     | Req'd   |
|----------------------------|---|----------|---------|
| <b>Message Header</b>      |   |          |         |
| TimeDate                   | The dateTime, in GMT, when the payload is published.  | dateTime | Yes     |
| Source                     | The source of published data.   | string   | Yes     |
| <b>Message Payload</b>     |   |          |         |
| <b>GeneratingBid</b>       |   |          |         |
| description                | Description of generating bid. (1-32 characters)  | string   | No      |
| name                       | Unique name for generating bid. (1-32 characters)   | string   | No      |
| startTime                  | Start time and date of the trading period for which bid applies.  | dateTime | Yes     |
| stopTime                   | Stop time and date of the trading period for which bid applies.   | dateTime | Yes     |
| marketType                 | The market type, DAM or RTM.  | string   | Yes     |
| energyMaxDay               | Maximum amount of energy per day which can be produced during the trading period in MWh.  | float    | No      |
| energyMinDay               | Minimum amount of energy per day which has to be produced during the trading period in MWh.   | float    | No      |
| contingencyAvailFlag       | Contingent operating reserve availability. Valid value = YES or NO. Resource is available to participate with capacity only in contingency dispatch. This is an optional element, but required when submitting Day Ahead Ancillary Service bid. | YesNo    | No<br>X |
| noLoadCost                 | Resource fixed no load cost.  | float    | No      |
| RegisteredGenerator.mrid   | Name of the registered Generating Resource(1-32 characters)   | string   | Yes     |
| SchedulingCoordinator.mrid | Scheduling Coordinator Identifier. (1-32 characters)  | string   | Yes     |
| ProductBid.description     | Description of Product Bid. (1-32 characters)   | string   | No      |

| Element                                    | Data Description   | Type     | Req'd         |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
|--|--|----------|---------------|----|-----------------|----|-------------------|----|--------------------|----|------------------------|----|----------------------------|-----|---------------------|-----|-----------------------|----|---------------|----|-----------------|----|-------------------|----|--------------------|----|------------------------|-----|---------------------|-----|-----------------------|--------|-----|
| ProductBid.MarketProduct.description       | Description of Market Product. (1-32 characters)   | string   | No            |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| ProductBid.MarketProduct.marketProductType | <p>Market product type. Valid values are:</p> <p>For Day Ahead Market</p> <table> <tr><td>EN</td><td>– Energy type</td></tr> <tr><td>RU</td><td>– Regulation up</td></tr> <tr><td>RD</td><td>– Regulation down</td></tr> <tr><td>SR</td><td>– spinning reserve</td></tr> <tr><td>NR</td><td>– Non-spinning reserve</td></tr> <tr><td>RC</td><td>– Residual Unit Commitment</td></tr> <tr><td>LFU</td><td>– Load Following Up</td></tr> <tr><td>LFD</td><td>– Load Following Down</td></tr> </table> <p>For Real Time Market</p> <table> <tr><td>EN</td><td>– Energy type</td></tr> <tr><td>RU</td><td>– Regulation up</td></tr> <tr><td>RD</td><td>– Regulation down</td></tr> <tr><td>SR</td><td>– spinning reserve</td></tr> <tr><td>NR</td><td>– Non-spinning reserve</td></tr> <tr><td>LFU</td><td>– Load Following Up</td></tr> <tr><td>LFD</td><td>– Load Following Down</td></tr> </table> <p>Please refer to section 2.7.3 for appropriate combination of Product Type and SelfSchedule Type</p> | EN       | – Energy type | RU | – Regulation up | RD | – Regulation down | SR | – spinning reserve | NR | – Non-spinning reserve | RC | – Residual Unit Commitment | LFU | – Load Following Up | LFD | – Load Following Down | EN | – Energy type | RU | – Regulation up | RD | – Regulation down | SR | – spinning reserve | NR | – Non-spinning reserve | LFU | – Load Following Up | LFD | – Load Following Down | string | Yes |
| EN   | – Energy type  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| RU   | – Regulation up  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| RD   | – Regulation down  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| SR   | – spinning reserve   |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| NR   | – Non-spinning reserve   |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| RC   | – Residual Unit Commitment   |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| LFU  | – Load Following Up  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| LFD  | – Load Following Down  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| EN   | – Energy type  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| RU   | – Regulation up  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| RD   | – Regulation down  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| SR   | – spinning reserve   |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| NR   | – Non-spinning reserve   |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| LFU  | – Load Following Up  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| LFD  | – Load Following Down  |          |               |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| ProductBid.MarketProduct.selfSchedType     | <p>Self schedule bid contract type. Valid values are:</p> <p>PT – Price Taker<br/>         LPT – Lower Price Taker<br/>         ETC – Existing transmission contract<br/>         TOR – Transmission ownership right<br/>         RA – Resource Adequacy<br/>         RMT – Regulatory Must Take<br/>         SP – Self Provision<br/>         LOF – Lay Off Self Schedule<br/>         WHL – Wheeling Transaction</p>   | string   | No            |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| ProductBid.BidSelfSched                    | Self Schedule Bid Component is optional.   |          | No            |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| ProductBid.BidSelfSched.description        | Description of Bid Self Sched. (1-32 characters)   | string   | No            |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |
| ProductBid.BidSelfSched.timeIntervalStart  | Start of the time interval for the operating hour for which the bid is being submitted.  | dateTime | Yes           |    |                 |    |                   |    |                    |    |                        |    |                            |     |                     |     |                       |    |               |    |                 |    |                   |    |                    |    |                        |     |                     |     |                       |        |     |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.BidSelfSched.timeIntervalEnd              | End of the time interval for the operating hour for which the bid is being submitted.   | dateTime | Yes   |
| ProductBid.BidSelfSched.selfSchedMw                  | MW value for the specified Self Schedule Product Types other than Pumping Self Schedule Type.   | float    | No    |
| ProductBid.BidSelfSched.wheelingTransactionReference | A unique identifier of a Wheeling Transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources (Resources must be registered with an Energy Type of "WHL" in order to submit a Wheeling Transaction. All Wheeling Transactions must be accompanied by either an Energy Bid or Self-Schedule [PT, LPT, ETC, TOR]) | String   | No    |
| ProductBid.BidSelfSched.pumpSelfSchedMw              | Used in conjunction with either the PT, ETC, TOR pumping self schedule quantity (any or all). If this value is not null, then the unit is considered to be in pumping mode.   | Float    | No    |
| ProductBid.BidSelfSched.ContractRight                | Required for Self Schedule type ETC, TOR, RMT   |          | No    |
| ProductBid.BidSelfSched.ContractRight.description    | Description of ContractRight. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.ContractRight.mrid           | Contract Reference Name (CRN) (1-32 characters)   | string   | Yes   |
| ProductBid.UnitSchedule                              | Needed when submitting Pumping Level, Pumping Cost, Pumping Shutdown Cost   |          | No    |
| ProductBid.UnitSchedule.timeIntervalStart            | Start of the time interval for the operating hour for which the bid is being submitted.   | dateTime | Yes   |
| ProductBid.UnitSchedule.timeIntervalEnd              | End of the time interval for the operating hour for which the bid is being submitted.   | dateTime | Yes   |
| ProductBid.UnitSchedule.parameterID                  | Parameter ID. Valid values are:<br>PUMPING_LEVEL<br>PUMPING_COST<br>PUMPING_SHUTDOWN_COST   | string   | Yes   |

| Element  | Data Description   | Type     | Req'd |
|--|--|----------|-------|
| ProductBid.UnitSchedule.parameterType                          | Indication of the type of parameter being defined (STRING or FLOAT) which should be used in conjunction with the parameterID chosen.<br><br>PUMPING_LEVEL (FLOAT)<br>PUMPING_COST (FLOAT)<br>PUMPING_SHUTDOWN_COST (FLOAT) | string   | Yes   |
| ProductBid.UnitSchedule.parameterValue                         | Parameter value to be used with associated parameterType which replaces corresponding default values from input bid data. This should be used if the parameter type is FLOAT   | float    | No    |
| ProductBid.UnitSchedule.parameterStringValue                   | If ProductBid.UnitSchedule = STRING then value = YES. Else value = NO. This should be used if the parameter type is STRING   | string   | No    |
| ProductBid.BidSchedule   | Energy Bid Component is optional.  | string   | No    |
| ProductBid.BidSchedule.description                             | Description of Bid Schedule. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.timeIntervalStart                       | Start of the time interval for the operating hour for which the bid is being submitted.  | dateTime | Yes   |
| ProductBid.BidSchedule.timeIntervalEnd                         | End of the time interval for the operating hour for which the bid is being submitted.  | dateTime | Yes   |
| ProductBid.BidSchedule.BidPriceCurve                           | Used when submitting an Economic Bid for a resource.   |          | No    |
| ProductBid.BidSchedule.BidPriceCurve.description               | Description of Bid Price Curve. (1-32 characters)  | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.xAxisData  | The MW value specified on the price curve.   | float    | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.y1AxisData | The dollar (\$) value specified on the price curve.. A price curve segment consist of both the Mw value and the dollar value.<br><br>Pattern value = [-+]?[\\d]+.?[\\d]?[\\d]?   | float    | Yes   |
| ProductBid.BidDistributionFactor                               | This element is only applicable to Aggregate resource submitting a GDF.  | string   | No    |
| ProductBid.BidDistributionFactor.description                   | Description of Bid Distribution Factor. (1-32 characters)  | string   | No    |

| Element   | Data Description   | Type     | Req'd |
|---|--|----------|-------|
| ProductBid.BidDistributionFactor.timeIntervalStart                            | Start of the time interval of the operating hour for which the GDF applies. The start and end time must be aligned with the start and end time specified for the Energy Bid.   | dateTime | Yes   |
| ProductBid.BidDistributionFactor.timeIntervalEnd                              | End of the time interval of the operating hour for which the GDF applies. The start and end time must be aligned with the start and end time specified for the Energy Bid.   | dateTime | Yes   |
| ProductBid.BidDistributionFactor.PnodeDistributionFactor                      | Required element if Distribution Factor is included in the bid.  |          | Yes   |
| ProductBid.BidDistributionFactor.PnodeDistributionFactor.factor               | Used to calculate "participation" of Pnode in an AggregatePnode. For example, for regulation region this factor is 1 and total sum of all factors for a specific regulation region does not have to be 1. For pricing zone the total sum of all factors has to value must be => 0 and <= 1 | float    | Yes   |
| ProductBid.BidDistributionFactor.PnodeDistributionFactor.IndividualPnode.mrid | Individual Pnode name (1-32 characters) (these are CNODE names associated with the aggregate resource to determine which set will be used for the aggregate to determine the distribution factor.  | String   | Yes   |
| RampRateCurve   | This element should only used in conjunction with RampRateCurve.CurveSchedData   |          | No    |
| RampRateCurve.description   | Description of Ramp Rate Curve. (1-32 characters)  | string   | No    |
| RampRateCurve.rampRateType  | Indication of the type of parameter being defined<br>Valid Types are:<br>OP – (Operational) Use both xAixs and y1Axis<br>REG – (Regulation) Use both xAsix and y1Axis<br>OP_RES - (Operating Reserve) only y1Axis  | string   | No    |
| RampRateCurve.CurveSchedData.xAxisData  | The data value of the X-axis variable is the Operating Level if ramp rate type OP is used, otherwise the MW value is used.   | float    | No    |
| RampRateCurve.CurveSchedData.y1AxisData                                       | The data value of the Y-axis variable is the Ramp Rate value if the ramp rate type OP is used, otherwise the MW value is used.   | Float    | Yes   |
| StartUpCostCurve  |  |          | No    |
| StartUpCostCurve.description  | Description of Start Up Cost Curve. (1-32 characters)  | string   | No    |
| StartUpCostCurve.CurveSchedData.xAxisData                                     | The data value of the X-axis variable is represented as Cooling time in minutes.   | float    | Yes   |

| Element  | Data Description   | Type     | Req'd |
|--|--|----------|-------|
| StartUpCostCurve.CurveSched<br>Data.y1AxisData | The data value of the Y-axis variable, is represented as the Cost (\$) value.                      | float    | Yes   |
| StartUpTimeCurve                               |  |          | No    |
| StartUpTimeCurve.description                   | Description of Start Up Time Curve. (1-32 characters)  | string   | No    |
| StartUpTimeCurve.CurveSched<br>Data.xAxisData  | The data value of the X-axis variable is represented as Cooling time in minutes.                   | float    | Yes   |
| StartUpTimeCurve.CurveSched<br>Data.y1AxisData | The data value of the Y-axis variable is represented as Startup time in minutes                    | float    | Yes   |
|  |  |          |       |
| <b>InterTieBid</b>                             |  |          |       |
| description                                    | Description of intertie bid. (1-32 characters)   | string   | No    |
| name   | Unique name of intertie bid. (1-32 characters)   | string   | No    |
| startTime                                      | Start time and date for which bid applies.   | dateTime | Yes   |
| stopTime                                       | Stop time and date for which bid is applies.   | dateTime | Yes   |
| marketType                                     | The market type, DAM or RTM.   | string   | Yes   |
| MinHourlyBlock                                 | The Registered upper bound of MHB for an Inter-Tie Resource (if not specified a value of 1 is set) | integer  | No    |
| RegisteredInterTie.mrid                        | Registered name of the Intertie Resource. (1-32 characters)  | string   | Yes   |
| SchedulingCoordinator.mrid                     | Scheduling Coordinator Identifier. (1-32 characters)   | string   | Yes   |
| ProductBid.description                         | Description of product bid. (1-32 characters)  | string   | No    |
| ProductBid.MarketProduct.<br>description       | Description of market product. (1-32 characters)   | string   | No    |

| Element                                    | Data Description   | Type     | Req'd |
|--|--|----------|-------|
| ProductBid.MarketProduct.marketProductType | <p>Market product type. Valid values are:</p> <p>For Day Ahead Market</p> <p>EN – Energy type<br/>RU – Regulation up<br/>RD – Regulation down<br/>SR – spinning reserve<br/>NR - Non-spinning reserve<br/>RC – Residual Unit Commitment</p> <p>For Real Time Market</p> <p>EN – Energy type<br/>RU – Regulation up<br/>RD – Regulation down<br/>SR – spinning reserve<br/>NR – Non-spinning reserve</p> <p>Please refer to section 2.7.3 for appropriate combination of Product Type and SelfSchedule Type</p> | string   | Yes   |
| ProductBid.MarketProduct.selfSchedType     | <p>Self schedule bid contract type. Valid values are:</p> <p>PT – Price Taker<br/>LPT – Lower Price Taker<br/>ETC – Existing transmission contract<br/>TOR – Transmission ownership right<br/>RA – Resource Adequacy<br/>SP – Self Provision<br/>WHL – Wheeling Transaction</p>  | string   | No    |
| ProductBid.BidSelfSched                    | Self Schedule Bid Component is optional  |          | No    |
| ProductBid.BidSelfSched.description        | Description of bid self schedule (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.timeIntervalStart  | Start of the time interval for the operating hour for which the bid is being submitted.  | dateTime | Yes   |
| ProductBid.BidSelfSched.timeIntervalEnd    | End of the time interval for the operating hour for which the bid is being submitted.  | dateTime | Yes   |
| ProductBid.BidSelfSched.selfSchedMw        | Self Schedule MW for the referenced commodity.   | float    | No    |

| Element   | Data Description   | Type     | Req'd |
|---|--|----------|-------|
| ProductBid.BidSelfSched.wheelingTransactionReference          | A unique identifier of a Wheeling Transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources (Resources must be registered with an Energy Type of "WHL" in order to submit a Wheeling Transaction.) All Wheeling Transactions must be accompanied by either an Energy Bid or Self-Schedule [PT, LPT, ETC, TOR]) | String   | No    |
| ProductBid/BidSelfSched/selfSchedSptResource                  | Valid Generating Resource specified in the PT Export Self Sched as the Support Resource  | String   | No    |
| ProductBid.BidSelfSched.ContractRight                         | Required for Self Schedule type ETC, TOR, RMT  |          | No    |
| ProductBid.BidSelfSched.ContractRight.description             | Description of contract right. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.ContractRight.mrid                    | Contract Reference Name (CRN) (1-32 characters)  | string   | Yes   |
| contingencyAvailFlag  | Contingent operating reserve availability. Valid value = YES or NO. Resource is available to participate with capacity only in contingency dispatch. This is an optional element, but required when submitting Day Ahead Ancillary Service bid.  | string   | No    |
| ProductBid.BidSchedule  | Energy Bid Component is optional   |          | No    |
| ProductBid.BidSchedule.description                            | Description of Bid Schedule. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.timeIntervalStart                      | Start of the time interval for the operating hour for which the bid is being submitted.  | dateTime | Yes   |
| ProductBid.BidSchedule.timeIntervalEnd                        | End of the time interval for the operating hour for which the bid is being submitted..   | dateTime | Yes   |
| ProductBid.BidSchedule.BidPriceCurve                          | Used when submitting an Economic Bid for a resource.   |          | No    |
| ProductBid.BidSchedule.BidPriceCurve.description              | Description of Bid Price Curve. (1-32 characters)  | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.xAxisData | The MW value specified on the price curve.   | float    | Yes   |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.y1AxisData | The dollar (\$) value specified on the price curve. A price curve segment consist of both the Mw value and the dollar value.<br><br>Pattern value = [-+]?[d]+\.?d?\d? | float    | Yes   |
|  |   |          |       |
| <b>LoadBid</b>   |   |          |       |
| description  | Description of Load Bid. (1-32 characters)  | string   | No    |
| name   | Unique name of Load Bid. (1-32 characters)  | string   | No    |
| startTime  | Start time and date for which bid applies.  | dateTime | Yes   |
| stopTime   | Stop time and date for which bid is applies.  | dateTime | Yes   |
| marketType   | The market type, DAM or RTM.  | string   | Yes   |
| RegisteredLoad.mrid  | Name of the Registered Load Resource. (1-32 characters)   | string   | Yes   |
| SchedulingCoordinator.mrid                                     | Scheduling Coordinator Identifier. (1-32 characters)  | string   | Yes   |
| ProductBid.description   | Description of Product Bid. (1-32 characters)   | string   | No    |
| ProductBid.MarketProduct.description                           | Description of Market Product. (1-32 characters)  | string   | No    |
| ProductBid.MarketProduct.marketProductType                     | Market product type. Valid values are:<br>EN – Energy type  | string   | Yes   |
| ProductBid.MarketProduct.selfSchedType                         | Self schedule bid contract type. Valid values are:<br>PT – Price Take<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right                   | string   | No    |
| ProductBid.BidSelfSched  | Self Schedule Bid Component is optional   |          | No    |
| ProductBid.BidSelfSched.description                            | Description of Bid Self Schedule. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.timeIntervalStart                      | Start of the time interval for the operating hour for which the bid is being submitted.   | dateTime | Yes   |
| ProductBid.BidSelfSched.timeIntervalEnd                        | End of the time interval for the operating hour for which the bid is being submitted.   | dateTime | Yes   |
| ProductBid.BidSelfSched.selfSchedMw                            | Self Schedule MW value for the referenced commodity.  | float    | No    |

| Element  | Data Description   | Type     | Req'd |
|--|--|----------|-------|
| ProductBid.BidSelfSched.ContractRight                          | Required for Self Schedule type ETC, TOR   |          | No    |
| ProductBid.BidSelfSched.ContractRight.description              | Description of Contract Right. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.ContractRight.mrid                     | Contract Reference Name (CRN). (1-32 characters)   | string   | Yes   |
| ProductBid.BidSchedule   | Energy Bid Component is optional   |          | No    |
| ProductBid.BidSchedule.description                             | Description of Bid Schedule. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.timeIntervalStart                       | Start of the time interval for the operating hour for which the bid is being submitted.  | dateTime | Yes   |
| ProductBid.BidSchedule.timeIntervalEnd                         | End of the time interval for the operating hour for which the bid is being submitted.  | dateTime | Yes   |
| ProductBid.BidSchedule.BidPriceCurve                           | Used when submitting an Economic Bid for a resource.   |          | No    |
| ProductBid.BidSchedule.BidPriceCurve.description               | Description of Bid Price Curve.  | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.xAxisData  | The Mw value specified on the price curve.   | float    | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.y1AxisData | The dollar (\$) value specified on the price curve. A price curve segment consist of both the Mw value and the dollar value.<br><br>Pattern value = [-+]?[d]+\.?[d]?[d]? | float    | Yes   |

## 2.7.2 DateTime Data Type Format

The dateTime data type is used to specify a date and a time.

The dateTime is specified in the following form "YYYY-MM-DDThh:mm:ss" where:

- YYYY indicates the year
- MM indicates the month
- DD indicates the day
- T indicates the start of the required time section
- hh indicates the hour
- mm indicates the minute



ss indicates the second

Note: All components are required.

To specify a time zone, you can either enter a date/time in Universal Time Coordinate (UTC) time by adding a "Z" behind the time, for example:

```
<startdate>2002-05-30T09:00:00Z</startdate>
```

or you can specify an offset from the UTC time by adding a positive or negative time behind the time, for example:

```
<startdate>2002-05-30T09:00:00-08:00</startdate>
```

or

```
<startdate>2002-05-30T09:00:00+08:00</startdate>
```

Offset of the UTC time is useful when coordinating Daylight Saving Time (DST) changes.

### 2.7.3 Bidding Product Type with Self Schedule Type

For each Product Type there will be an associated Self Schedule Type with it when submitting bids. Use the following table for matching Product Type to Self Schedule Type:

| Product Type                       | Self Schedule Type                                  |
|------------------------------------|---|
| EN                                 | BAS<br>ETC<br>LOF<br>PT<br>LPT<br>RMT<br>TOR<br>WHL |
| RU<br>RD<br>LFU<br>LFD<br>SR<br>NR | SP  |
| RC                                 | RA  |

| Product Type | Self Schedule Type |
|--------------|--------------------|
| RC           |                    |

## 2.7.4 Schema (RawBidSet.xsd)

//// start ////

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:m="http://www.caiso.com/soa/2008-08-10/RawBidSet.xsd"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.caiso.com/soa/2008-08-10/RawBidSet.xsd"
  elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xs:element name="RawBidSet" type="m:RawBidSet"/>
  <xs:complexType name="RawBidSet">
    <xs:sequence>
      <xs:element name="MessageHeader" type="m:MessageHeader"
        minOccurs="0"/>
      <xs:element name="MessagePayload"
        type="m:MessagePayload"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="MessageHeader">
    <xs:annotation>
      <xs:documentation>Message header containing descriptive
information about the message.</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="TimeDate" type="xs:dateTime">
        <xs:annotation>
          <xs:documentation>Application level relevant time
and date for when this instance of the message was produced.</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="Source" type="xs:string">
        <xs:annotation>
          <xs:documentation>Source system that publishes
the message. For CAISO, examples include ADS, ALFS, CAP, CRR, EMS, ETCC,
FNM, IFM, MF, PI, RLC, RTM, SaMC, SIBR, SLIC, etc.</xs:documentation>
        </xs:annotation>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:schema>

```

```

        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="MessagePayload">
    <xs:sequence>
        <xs:element name="GeneratingBid" type="m:GeneratingBid"
minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="InterTieBid" type="m:InterTieBid"
minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>
                <xs:documentation>This class represents the inter
tie bid</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="LoadBid" type="m:LoadBid" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="GeneratingBid">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="name" type="m:name" minOccurs="0">
            <xs:annotation>
                <xs:documentation>Unique name among objects
owned by the same parent.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="mrid" type="xs:string" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="startTime" type="xs:dateTime">
            <xs:annotation>

```

```

<xs:documentation>Start time and date for which
bid applies.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="stopTime" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>Stop time and date for which
bid is applicable.</xs:documentation>
            </xs:annotation>
</xs:element>
<xs:element name="marketType" type="m:MarketType">
    <xs:annotation>
        <xs:documentation>The market type, DAM or
RTM.</xs:documentation>
            </xs:annotation>
</xs:element>
<xs:element name="energyMaxDay" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Maximum amount of energy
per day which can be produced during the trading period in MWh</xs:documentation>
            </xs:annotation>
</xs:element>
<xs:element name="energyMinDay" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Minimum amount of energy
per day which has to be produced during the trading period in MWh</xs:documentation>
            </xs:annotation>
</xs:element>
<xs:element name="contingencyAvailFlag" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>CAISO Extension contingent
operating reserve availability (Yes/No). Resource is available to participate with
capacity only in contingency dispatch. CleanBid Message: IFM, RUC, RTD,
RTPD</xs:documentation>
            </xs:annotation>
</xs:element>
<xs:element name="noLoadCost" type="xs:float"
minOccurs="0">

```

```

<xs:annotation>
    <xs:documentation>Resource fixed no load
cost.</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="RegisteredGenerator"
type="m:RegisteredGeneratorNmReq"/>
        <xs:element name="SchedulingCoordinator"
type="m:SchedulingCoordinatorNmReq">
            <xs:annotation>
                <xs:documentation>All CAISO market participants
are represented by Scheduling Coordinators (SCs) that are registered with the CAISO
(section 5.1.2 IFM SRS). One participant can register multiple SCs with the CAISO.
Many participants can do business with the CAISO using a single SC. Each generator
resource can only be scheduled by one SC. One SC can schedule multiple generators. A
load scheduling point can be used by multiple SCs. Each SC can schedule load at
multiple scheduling points. Each SC can have more than one load schedule at any load
scheduling point as long as each load schedule at the same load scheduling point has a
separate resource ID and settlement-quality meter. An inter-tie scheduling point can be
used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling
points. An SC can have multiple interchange schedules at the same inter-tie scheduling
point by assigning a unique interchange identifier to each interchange schedule.
Currently, the type of SC includes: Scheduling Coordinator (MDAS certified) SC of
Inter-SC Trades Only (not MDAS certified) SC & FTR holder SC, FTR holder, TO ,
& UDC.</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="ProductBid" type="m:ProductBid_G"
maxOccurs="unbounded">
                <xs:annotation>
                    <xs:documentation>Component of a bid that
pertains to one market product.</xs:documentation>
                </xs:annotation>
                </xs:element>
                <xs:element name="RampRateCurve" type="m:RampRateCurve"
minOccurs="0" maxOccurs="3">
                    <xs:annotation>
                        <xs:documentation>Ramp rate as a function of
resource MW output</xs:documentation>
                    </xs:annotation>
                    </xs:element>

```

```
<xs:element name="StartUpCostCurve"
type="m:StartUpCostCurve" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Startup costs and time as a
function of down time. Relationship between unit startup cost (Y1-axis) vs. unit elapsed
down time (X-axis). For CAISO, the Y2-axis is not used.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="StartUpTimeCurve"
type="m:StartUpTimeCurve" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Startup time curve as a function
of down time, where time is specified in minutes. Relationship between unit startup time
(Y1-axis) vs. unit elapsed down time (X-axis).</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="description">
    <xs:restriction base="xs:string">
        <xsmaxLength value="32"/>
        <xs:minLength value="1"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="name">
    <xs:restriction base="xs:string">
        <xsmaxLength value="32"/>
        <xs:minLength value="1"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="MarketType">
    <xs:annotation>
        <xs:documentation>market type</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
        <xs:enumeration value="DAM"/>
        <xs:enumeration value="RTM"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="YesNo">
    <xs:restriction base="xs:string">
```

```

        <xs:enumeration value="YES"/>
        <xs:enumeration value="NO"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="RegisteredGeneratorNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:simpleType name="mrid">
    <xs:restriction base="xs:string">
        <xs:maxLength value="32"/>
        <xs:minLength value="1"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="SchedulingCoordinatorNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="xs:string">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="ProductBid_G">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="MarketProduct"
type="m:RawBidSetMarketProduct">

```

```

<xs:annotation>
    <xs:documentation>MarketProduct provides the
details about the market product type and self schedule type</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="BidSelfSched" type="m:BidSelfSched"
minOccurs="0" maxOccurs="1024">
        <xs:annotation>
            <xs:documentation>CAISO Extension Defines self
schedule values to be used for specified time intervals</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="UnitSchedule"
type="m:UnitScheduleRawBid" minOccurs="0" maxOccurs="unbounded">
                <xs:annotation>
                    <xs:documentation>CAISO Extension Defines
values that can be changed hourly within a daily bid. Provides indication of parameter
type (string or float) and then a location for the value.</xs:documentation>
                    </xs:annotation>
                    </xs:element>
                    <xs:element name="BidSchedule" type="m:BidSchedule"
minOccurs="0" maxOccurs="25">
                        <xs:annotation>
                            <xs:documentation>CAISO Extension Defines bid
schedules to allow a product bid to use specified bid price curves for different time
intervals.</xs:documentation>
                            </xs:annotation>
                            </xs:element>
                            <xs:element name="BidDistributionFactor"
type="m:BidDistributionFactor" minOccurs="0" maxOccurs="25">
                                <xs:annotation>
                                    <xs:documentation>This class allows SC to input
different time intervals for distribution factors</xs:documentation>
                                    </xs:annotation>
                                    </xs:element>
                                </xs:sequence>
                            </xs:complexType>
                            <xs:complexType name="RawBidSetMarketProduct">
                                <xs:sequence>
                                    <xs:element name="description" type="m:description"
minOccurs="0">

```

```

<xs:annotation>
    <xs:documentation>Description of the object or
instance.</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="marketProductType"
type="m:marketProductType">
        <xs:annotation>
            <xs:documentation>Market product type includes:
EN (Energy) RU (Regulation Up) RD (Regulation Dn) SR (Spinning Reserve) NR (Non-
Spinning Reserve) RC (RUC)</xs:documentation>
        </xs:annotation>
        </xs:element>
        <xs:element name="selfSchedType" type="m:selfSchedType"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>This attribute is used to specify
if a bid is a self sched bid. If so what self sched type is it. The possible values are shown
as follow but not limited to: "NA" - Not Applicable" 'GT' - Generic type 'ETC' - Existing
transmission contract 'TOR' - Transmission ownership right 'RMR' - Reliability must run
'RGMR' - Regulatory must run 'ORFC' - Operating reserve flagged for contingency
'NMSR' - Non must offer supply reduction 'NLRI' - Non participating load
reduction/increase 'MOSR' - Must offer suply reduction "RMT" - Regulatory must take
This attribute is originally defined in the BidSelfSched class (proposed by
SIEMENS)</xs:documentation>
            </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
<xs:simpleType name="marketProductType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="EN"/>
        <xs:enumeration value="RU"/>
        <xs:enumeration value="RD"/>
        <xs:enumeration value="SR"/>
        <xs:enumeration value="NR"/>
        <xs:enumeration value="RC"/>
        <xs:enumeration value="LFU"/>
        <xs:enumeration value="LFD"/>
    </xs:restriction>
</xs:simpleType>

```

```

<xs:simpleType name="selfSchedType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="PT"/>
    <xs:enumeration value="ETC"/>
    <xs:enumeration value="TOR"/>
    <xs:enumeration value="RMT"/>
    <xs:enumeration value="SP"/>
    <xs:enumeration value="RA"/>
    <xs:enumeration value="BAS"/>
    <xs:enumeration value="LOF"/>
    <xs:enumeration value="WHL"/>
    <xs:enumeration value="LPT"/>
  </xs:restriction>
</xs:simpleType>
<xs:complexType name="BidSelfSched">
  <xs:sequence>
    <xs:element name="description" type="m:description"
minOccurs="0">
      <xs:annotation>
        <xs:documentation>Description of the object or
instance.</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="timeIntervalStart" type="xs:dateTime">
      <xs:annotation>
        <xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="timeIntervalEnd" type="xs:dateTime">
      <xs:annotation>
        <xs:documentation>End of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="selfSchedMw" type="xs:float"
minOccurs="0">
      <xs:annotation>
        <xs:documentation>Self scheduled
value</xs:documentation>
      </xs:annotation>
    </xs:element>
  </xs:sequence>
</xs:complexType>

```

```

</xs:element>
<xs:element name="wheelingTransactionReference"
type="xs:string" minOccurs="0">
    <xs:annotation>
        <xs:documentation>A unique identifier of a
wheeling transaction. A wheeling transaction is a balanced Energy exchange among
Supply and Demand Resources.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="pumpSelfSchedMw" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Contains the PT, ETC, TOR
pumping self schedule quantity. If this value is not null, then the unit is in pumping
mode.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="selfSchedSptResource" type="xs:string"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>PT Export Self Sched Support
Resource</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="ContractRight"
type="m:BidSetContractRight" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Provides definition of
Transmission Ownership Right and Existing Transmission Contract identifiers for use by
SCUC. RMR contract hosting (MasterFile): Startup lead time, Contract Service Limits,
Max Service Hours, Max MWhs, Max Start-ups, Ramp Rate, Max Net Dependable
Capacity, Min Capacity and Unit Substitution for IFM/RTM to
retrieve;</xs:documentation>
    </xs:annotation>
    </xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="BidSetContractRight">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">

```

```

<xs:annotation>
    <xs:documentation>Description of the object or
instance.</xs:documentation>
        </xs:annotation>
        </xs:element>
        <xs:element name="mrid" type="m:mrid" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
            </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="UnitScheduleRawBid">
            <xs:sequence>
                <xs:element name="timeIntervalStart" type="xs:dateTime">
                    <xs:annotation>
                        <xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="timeIntervalEnd" type="xs:dateTime">
                    <xs:annotation>
                        <xs:documentation>End of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="parameterID" type="m:parameterID">
                    <xs:annotation>
                        <xs:documentation>Parameter ID. Valid values
such as PUMPING_LEVEL</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="parameterType" type="m:ParameterType">
                    <xs:annotation>
                        <xs:documentation>Indication of the type of
parameter being defined (String or Float).</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="parameterValue" type="xs:float"
minOccurs="0">
            </xs:sequence>
        </xs:complexType>
    </xs:annotation>

```

```

<xs:annotation>
    <xs:documentation>Parameter value which replaces
corresponding default values from input bid data</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="parameterStringValue" type="xs:string"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Parameter value which replaces
corresponding default values from input bid data</xs:documentation>
    </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:simpleType name="parameterID">
    <xs:restriction base="xs:string">
        <xs:enumeration value="PUMPING_LEVEL"/>
        <xs:enumeration value="NERC_TAG"/>
        <xs:enumeration value="SCHEDULING_POINT"/>
        <xs:enumeration value="PUMPING_COST"/>
        <xs:enumeration value="PUMPING_SHUTDOWN_COST"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="ParameterType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="STRING"/>
        <xs:enumeration value="FLOAT"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="BidSchedule">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="timeIntervalStart" type="xs:dateTime">
                <xs:annotation>

```

```

<xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="timeIntervalEnd" type="xs:dateTime">
<xs:annotation>
<xs:documentation>End of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="BidPriceCurve" type="m:BidPriceCurve">
<xs:annotation>
<xs:documentation>Relationship between unit
operating price in $/hour (Y-axis) and unit output in MW (X-axis).</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="BidPriceCurve">
<xs:sequence>
<xs:element name="description" type="m:description"
minOccurs="0">
<xs:annotation>
<xs:documentation>Description of the object or
instance.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="mrid" type="m:mrid" minOccurs="0">
<xs:annotation>
<xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="CurveSchedData"
type="m:RawBidPriceCurveSchedData" maxOccurs="11">
<xs:annotation>
<xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>

```

```

</xs:complexType>
<xs:complexType name="RawBidPriceCurveSchedData">
    <xs:sequence>
        <xs:element name="xAxisData" type="xs:float">
            <xs:annotation>
                <xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="y1AxisData" type="m:y1AxisData">
            <xs:annotation>
                <xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:sequence>
    </xs:complexType>
    <xs:simpleType name="y1AxisData">
        <xs:restriction base="xs:float">
            <xs:pattern value="[-+]?[\\d]+\\.?[\\d]*[\\d]?"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="BidDistributionFactor">
        <xs:sequence>
            <xs:element name="description" type="m:description"
minOccurs="0">
                <xs:annotation>
                    <xs:documentation>Description of the object or
instance.</xs:documentation>
                </xs:annotation>
            </xs:element>
            <xs:element name="timeIntervalStart" type="xs:dateTime">
                <xs:annotation>
                    <xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
                </xs:annotation>
            </xs:element>
            <xs:element name="timeIntervalEnd" type="xs:dateTime">
                <xs:annotation>
                    <xs:documentation>End of the time interval n
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
                </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>

```

```

        </xs:annotation>
    </xs:element>
    <xs:element name="PnodeDistributionFactor"
type="m:PnodeDistributionFactor" minOccurs="0" maxOccurs="unbounded">
        <xs:annotation>
            <xs:documentation>This class allows SC to input
different distribution factors for pricing node</xs:documentation>
        </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="PnodeDistributionFactor">
    <xs:sequence>
        <xs:element name="factor" type="xs:float">
            <xs:annotation>
                <xs:documentation>Used to calculate
"participation" of Pnode in an AggregatePnode. For example, for regulation region this
factor is 1 and total sum of all factors for a specific regulation region does not have to be
1. For pricing zone the total sum of all factors has to be 1.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="IndividualPnode"
type="m:IndividualPnodeNmReq">
    <xs:annotation>
        <xs:documentation>CleanBid Message: IFM, RUC,
RTP, RTPD.</xs:documentation>
    </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="IndividualPnodeNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="RampRateCurve">

```

```

<xs:sequence>
    <xs:element name="description" type="m:description"
minOccurs="0">
        <xs:annotation>
            <xs:documentation>Description of the object or
instance.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="rampRateType" type="m:RampRateType">
        <xs:annotation>
            <xs:documentation>How ramp rate is applied (e.g.,
raise or lower, as when applied to a generation resource) Note: CAISO defines the ramp
rate type as an enumeration.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="CurveSchedData"
type="m:RampRtCurveSchedData" maxOccurs="5">
        <xs:annotation>
            <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
        </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:simpleType name="RampRateType">
    <xs:annotation>
        <xs:documentation>ramp rate curve type</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
        <xs:enumeration value="OP"/>
        <xs:enumeration value="REG"/>
        <xs:enumeration value="OP_RES"/>
        <xs:enumeration value="LD_DROP"/>
        <xs:enumeration value="LD_PICKUP"/>
        <xs:enumeration value="INTERTIE"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="RampRtCurveSchedData">
    <xs:sequence>
        <xs:element name="xAxisData" type="xs:float" minOccurs="0">
            <xs:annotation>

```

```

<xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="y1AxisData" type="xs:float">
    <xs:annotation>
        <xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
            </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
<xs:complexType name="StartUpCostCurve">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
            </xs:element>
        <xs:element name="CurveSchedData"
type="m:RawBidStartCostCurveSchedData" maxOccurs="3">
            <xs:annotation>
                <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
            </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
<xs:complexType name="RawBidStartCostCurveSchedData">
    <xs:sequence>
        <xs:element name="xAxisData" type="xs:float">
            <xs:annotation>
                <xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
            </xs:annotation>
            </xs:element>
        <xs:element name="y1AxisData" type="xs:float">
            <xs:annotation>

```

```

<xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="StartUpTimeCurve">
  <xs:sequence>
    <xs:element name="description" type="m:description"
minOccurs="0">
      <xs:annotation>
        <xs:documentation>Description of the object or
instance.</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="CurveSchedData"
type="m:BidSetCurveSchedData" maxOccurs="3">
      <xs:annotation>
        <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
      </xs:annotation>
    </xs:element>
    </xs:sequence>
  </xs:complexType>
<xs:complexType name="BidSetCurveSchedData">
  <xs:sequence>
    <xs:element name="xAxisData" type="xs:float">
      <xs:annotation>
        <xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="y1AxisData" type="xs:float">
      <xs:annotation>
        <xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
      </xs:annotation>
    </xs:element>
    </xs:sequence>
  </xs:complexType>
<xs:complexType name="InterTieBid">

```

```

<xs:sequence>
    <xs:element name="description" type="m:description"
minOccurs="0">
        <xs:annotation>
            <xs:documentation>Description of the object or
instance.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="name" type="m:name" minOccurs="0">
        <xs:annotation>
            <xs:documentation>Unique name among objects
owned by the same parent.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="mrid" type="xs:string" minOccurs="0">
        <xs:annotation>
            <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="startTime" type="xs:dateTime">
        <xs:annotation>
            <xs:documentation>Start time and date for which
bid applies.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="stopTime" type="xs:dateTime">
        <xs:annotation>
            <xs:documentation>Stop time and date for which
bid is applicable.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="marketType" type="m:MarketType">
        <xs:annotation>
            <xs:documentation>The market type, DAM or
RTM.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="contingencyAvailFlag" type="m:YesNo"
minOccurs="0">
        <xs:annotation>

```

**<xs:documentation>**CAISO Extension contingent operating reserve availability (Yes/No). Resource is available to participate with capacity only in contingency dispatch. CleanBid Message: IFM, RUC, RTD, RTPD**</xs:documentation>**

**</xs:annotation>**

**</xs:element>**

**<xs:element name="minHourlyBlock" type="xs:integer"**

**minOccurs="0">**

**<xs:annotation>**

**<xs:documentation>**The minimum hourly block for an Inter-Tie Resource supplied within the bid.**</xs:documentation>**

**</xs:annotation>**

**</xs:element>**

**<xs:element name="RegisteredInterTie"**

**type="m:RegisteredInterTieNmReq">**

**<xs:annotation>**

**<xs:documentation>**This class represents the inter tie resource CleanBid Message: BITS, (IFM, RUC, RTP, RTPD) & OASIS.**</xs:documentation>**

**</xs:annotation>**

**</xs:element>**

**<xs:element name="SchedulingCoordinator"**

**type="m:SchedulingCoordinatorNmReq">**

**<xs:annotation>**

**<xs:documentation>**All CAISO market participants are represented by Scheduling Coordinators (SCs) that are registered with the CAISO (section 5.1.2 IFM SRS). One participant can register multiple SCs with the CAISO. Many participants can do business with the CAISO using a single SC. Each generator resource can only be scheduled by one SC. One SC can schedule multiple generators. A load scheduling point can be used by multiple SCs. Each SC can schedule load at multiple scheduling points. Each SC can have more than one load schedule at any load scheduling point as long as each load schedule at the same load scheduling point has a separate resource ID and settlement-quality meter. An inter-tie scheduling point can be used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling points. An SC can have multiple interchange schedules at the same inter-tie scheduling point by assigning a unique interchange identifier to each interchange schedule. Currently, the type of SC includes: Scheduling Coordinator (MDAS certified) SC of Inter-SC Trades Only (not MDAS certified) SC & FTR holder SC, FTR holder, TO , & UDC.**</xs:documentation>**

**</xs:annotation>**

**</xs:element>**

```

<xs:element name="ProductBid" type="m:ProductBid_I"
maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Component of a bid that
pertains to one market product.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="RampRateCurve" type="m:RampRateCurve"
minOccurs="0" maxOccurs="3">
    <xs:annotation>
        <xs:documentation>Ramp rate as a function of
resource MW output</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="RegisteredInterTieNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="ProductBid_I">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="MarketProduct"
type="m:RawBidSetMarketProduct">
            <xs:annotation>
                <xs:documentation>MarketProduct provides the
details about the market product type and self schedule type</xs:documentation>
            </xs:annotation>

```

```

</xs:element>
<xs:element name="BidSelfSched" type="m:BidSelfSched"
minOccurs="0" maxOccurs="1024">
    <xs:annotation>
        <xs:documentation>CAISO Extension Defines self
schedule values to be used for specified time intervals</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="UnitSchedule"
type="m:UnitScheduleRawBid" minOccurs="0" maxOccurs="unbounded">
        <xs:annotation>
            <xs:documentation>CAISO Extension Defines
values that can be changed hourly within a daily bid. Provides indication of parameter
type (string or float) and then a location for the value.</xs:documentation>
        </xs:annotation>
        </xs:element>
        <xs:element name="BidSchedule" type="m:BidSchedule"
minOccurs="0" maxOccurs="25">
            <xs:annotation>
                <xs:documentation>CAISO Extension Defines bid
schedules to allow a product bid to use specified bid price curves for different time
intervals.</xs:documentation>
            </xs:annotation>
            </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="LoadBid">
            <xs:sequence>
                <xs:element name="description" type="m:description"
minOccurs="0">
                    <xs:annotation>
                        <xs:documentation>Description of the object or
instance.</xs:documentation>
                    </xs:annotation>
                    </xs:element>
                    <xs:element name="name" type="m:name" minOccurs="0">
                        <xs:annotation>
                            <xs:documentation>Unique name among objects
owned by the same parent.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
        </xs:sequence>
    </xs:element>

```

```

<xs:element name="mrid" type="xs:string" minOccurs="0">
    <xs:annotation>
        <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="startTime" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>Start time and date for which
bid applies.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="stopTime" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>Stop time and date for which
bid is applicable.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="marketType" type="m:MarketType">
    <xs:annotation>
        <xs:documentation>The market type, DAM or
RTM.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="contingencyAvailFlag" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>CAISO Extension contingent
operating reserve availability (Yes/No). Resource is available to participate with
capacity only in contingency dispatch. CleanBid Message: IFM, RUC, RTD,
RTPD</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="RegisteredLoad"
type="m:RegisteredLoadNmReq"/>
    <xs:element name="SchedulingCoordinator"
type="m:SchedulingCoordinatorNmReq">
        <xs:annotation>
            <xs:documentation>All CAISO market participants
are represented by Scheduling Coordinators (SCs) that are registered with the CAISO
(section 5.1.2 IFM SRS). One participant can register multiple SCs with the CAISO.

```

Many participants can do business with the CAISO using a single SC. Each generator resource can only be scheduled by one SC. One SC can schedule multiple generators. A load scheduling point can be used by multiple SCs. Each SC can schedule load at multiple scheduling points. Each SC can have more than one load schedule at any load scheduling point as long as each load schedule at the same load scheduling point has a separate resource ID and settlement-quality meter. An inter-tie scheduling point can be used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling points. An SC can have multiple interchange schedules at the same inter-tie scheduling point by assigning a unique interchange identifier to each interchange schedule.

Currently, the type of SC includes: Scheduling Coordinator (MDAS certified) SC of Inter-SC Trades Only (not MDAS certified) SC & FTR holder SC, FTR holder, TO , & UDC.

```

</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="ProductBid" type="m:ProductBid_L"
maxOccurs="unbounded">
        <xs:annotation>
            <xs:documentation>Component of a bid that
pertains to one market product.</xs:documentation>
        </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="RegisteredLoadNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
            </xs:element>
        </xs:sequence>
</xs:complexType>
<xs:complexType name="ProductBid_L">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>

```

```

</xs:element>
<xs:element name="MarketProduct"
type="m:RawBidSetMarketProduct">
    <xs:annotation>
        <xs:documentation>MarketProduct provides the
details about the market product type and self schedule type</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="BidSelfSched" type="m:BidSelfSched"
minOccurs="0" maxOccurs="1024">
        <xs:annotation>
            <xs:documentation>CAISO Extension Defines self
schedule values to be used for specified time intervals</xs:documentation>
        </xs:annotation>
        </xs:element>
        <xs:element name="UnitSchedule"
type="m:UnitScheduleRawBid" minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>
                <xs:documentation>CAISO Extension Defines
values that can be changed hourly within a daily bid. Provides indication of parameter
type (string or float) and then a location for the value.</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="BidSchedule" type="m:BidSchedule"
minOccurs="0" maxOccurs="25">
                <xs:annotation>
                    <xs:documentation>CAISO Extension Defines bid
schedules to allow a product bid to use specified bid price curves for different time
intervals.</xs:documentation>
                </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
    </xs:schema>

```

////// end //////////////

Sample xml structured bids can be found in the "SIBR Sample xml data" document.  
 Posted separately with the Technical Interface documents, these also include Trade xml samples.

## 2.8 Raw Bid Set Response

### 2.8.1 Element Table

| Element            | Data Description                             | Type | Req'd    |
|--------------------|--|------|----------|
| Event.result       | Event result.                                | Yes  | string   |
| Event.id           | Event identifier.                            | Yes  | string   |
| Event.description  | Event description.                           | No   | string   |
| Event.creationTime | Event creation time.                         | No   | dateTime |
| Service.id         | Service identifier.                          | Yes  | string   |
| Service.name       | Name of a service.                           | Yes  | string   |
| BID.BID_ID         | Bid identification.                          | No   | string   |
| BID.START_TIME     | Start time and date for which bid applies.   | Yes  | dateTime |
| BID.END_TIME       | Stop time and date for which bid is applies. | Yes  | dateTime |
| BID.RESOURCE_ID    | Master resource identifier.                  | Yes  | string   |
| BID.MARKET_TYPE    | The market type, DAM or RTM.                 | Yes  | string   |
| BID.RESULTS        | Bid results.                                 | No   | string   |

### 2.8.2 Schema (SubmitStandardOutput.xsd)

```

<?xml version="1.0" encoding="UTF-8" ?>
<xs:schema xmlns:m="http://www.caiso.com/soa/2006-06-
  13/SubmitStandardOutput.xsd"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.caiso.com/soa/2006-06-
  13/SubmitStandardOutput.xsd" elementFormDefault="qualified"
  attributeFormDefault="unqualified">
  <xs:element name="outputDataType" type="m:outputDataType" />
  <xs:complexType name="outputDataType">
    <xs:sequence>
      <xs:element name="EventLog" type="m:EventLog" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="EventLog">
    <xs:sequence>
      <xs:element name="Event" type="m:Event" />
      <xs:element name="Service" type="m:Service" />
      <xs:element name="BID" minOccurs="0" maxOccurs="unbounded"
        type="m:BID" />
    </xs:sequence>
  
```

```

</xs:complexType>
<xs:complexType name="Event">
  <xs:sequence>
    <xs:element name="result" type="xs:string" />
    <xs:element name="id" type="xs:string" />
    <xs:element name="description" type="xs:string"
      minOccurs="0" />
    <xs:element name="creationTime" type="xs:dateTime"
      minOccurs="0" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="Service">
  <xs:sequence>
    <xs:element name="id" type="xs:string" />
    <xs:element name="name" type="xs:string" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="BID">
  <xs:sequence>
    <xs:element name="BID_ID" type="xs:string" minOccurs="0" />
    <xs:element name="START_TIME" type="xs:dateTime" />
    <xs:element name="END_TIME" type="xs:dateTime" />
    <xs:element name="RESOURCE_ID" type="xs:string" />
    <xs:element name="MARKET_TYPE" type="m:MARKET_TYPE" />
    <xs:element name="RESULTS" type="xs:string" minOccurs="0" />
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="MARKET_TYPE">
  <xs:restriction base="xs:string">
    <xs:enumeration value="DAM" />
    <xs:enumeration value="RTM" />
  </xs:restriction>
</xs:simpleType>
</xs:schema>

```

### 2.8.3 Example XML File (SubmitStandardOutput.xml)

```

<?xml version="1.0" encoding="UTF-8" ?>
- <!-- edited with XMLSpy v2006 sp2 U (http://www.altova.com) by CAISO
(California ISO) -->
<outputDataType xmlns="http://www.caiso.com/soa/2006-06-
  13/SubmitStandardOutput.xsd"
  xmlns:ns2="http://www.caiso.com/soa/2006-06-
  13/SubmitStandardOutput.xsd">
  <EventLog>
    <Event>
      <result>RawBidSet</result>
      <id>MessageID</id>
      <description>Processed with out any errors</description>
      <creationTime>2006-07-14T00:00:00.0Z</creationTime>
    </Event>
    <Service>
      <id>ServiceID</id>
      <name>SubmitRawBidSetService</name>
    </Service>
  </EventLog>
</outputDataType>

```

```

<BID>
  <BID_ID>BID-01</BID_ID>
  <START_TIME>2006-07-15T07:00:00.000Z</START_TIME>
  <END_TIME>2006-07-15T07:00:00.000Z</END_TIME>
  <RESOURCE_ID>RSC-01</RESOURCE_ID>
  <MARKET_TYPE>DAM</MARKET_TYPE>
</BID>
<BID>
  <BID_ID>BID-02</BID_ID>
  <START_TIME>2006-07-15T07:00:00.000Z</START_TIME>
  <END_TIME>2006-07-15T07:00:00.000Z</END_TIME>
  <RESOURCE_ID>RSC-02</RESOURCE_ID>
  <MARKET_TYPE>DAM</MARKET_TYPE>
</BID>
<BID>
  <BID_ID>BID-03</BID_ID>
  <START_TIME>2006-07-15T07:00:00.000Z</START_TIME>
  <END_TIME>2006-07-15T07:00:00.000Z</END_TIME>
  <RESOURCE_ID>RSC-03</RESOURCE_ID>
  <MARKET_TYPE>DAM</MARKET_TYPE>
</BID>
</EventLog>
<outputDataType>

```

## 2.9 Fault Return

### 2.9.1 Element Table

| Element            | Data Description               | Type   | Req'd |
|--------------------|--------------------------------|--------|-------|
| id                 | Event log identifier.          | string | No    |
| name               | Event log name.                | string | No    |
| description        | Event log description.         | string | No    |
| type               | Event log type.                | string | No    |
| creationTime       | Event log creation time.       | date   | No    |
| collectionType     | Event log collection type.     | string | No    |
| collectionQuantity | Event log collection quantity. | string | No    |
| Event.result       | Event result.                  | string | No    |
| Event.id           | Event identifier.              | string | No    |
| Event.name         | Event name.                    | string | No    |
| Event.description  | Event description.             | string | No    |

| Element              | Data Description       | Type     | Req'd |
|----------------------|------------------------|----------|-------|
| Event.creationTime   | Event creation time.   | dateTime | No    |
| Event.severity       | Event severity.        | string   | No    |
| Event.priority       | Event priority.        | string   | No    |
| Event.sequenceNumber | Event sequence number. | string   | No    |
| Event.eventType      | Event type.            | string   | No    |
| Service.id           | Service identifier.    | string   | No    |
| Service.name         | Service name.          | string   | No    |
| Service.description  | Service description.   | string   | No    |
| Service.comments     | Service comments.      | string   | No    |

## 2.9.2 Schema (StandardOutput.xsd)

```

<?xml version="1.0" encoding="UTF-8" ?>
<xs:schema xmlns:m="http://www.caiso.com/soa/2006-06-
  13/StandardOutput.xsd" xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.caiso.com/soa/2006-06-
  13/StandardOutput.xsd" elementFormDefault="qualified">
  <xs:element name="outputDataType" type="m:outputDataType" />
  <xs:complexType name="outputDataType">
    <xs:sequence>
      <xs:element name="EventLog" maxOccurs="unbounded"
        type="m:EventLog" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="EventLog">
    <xs:sequence>
      <xs:element name="Event" maxOccurs="unbounded"
        type="m:Event" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="Event">
    <xs:sequence>
      <xs:element name="result" type="xs:string" />
      <xs:element name="id" type="xs:string" />
    </xs:sequence>
  </xs:complexType>
</xs:schema>
  
```

## 2.9.3 Example XML File (StandardOutput.xml)

```

<?xml version="1.0" encoding="UTF-8" ?>
  
```

```
<outputDataType xmlns="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
<EventLog>
  <id>String</id>
  <name>String</name>
  <description>String</description>
  <type>String</type>
  <creationTime>1967-08-13</creationTime>
  <collectionType>String</collectionType>
  <collectionQuantity>String</collectionQuantity>
  <Event>
    <result>String</result>
    <id>String</id>
    <name>String</name>
    <description>String</description>
    <creationTime>2001-12-17T09:30:47.0Z</creationTime>
    <severity>String</severity>
    <priority>String</priority>
    <sequenceNumber>String</sequenceNumber>
    <eventType>String</eventType>
  </Event>
  <Service>
    <id>String</id>
    <name>String</name>
    <description>String</description>
    <comments>String</comments>
  </Service>
</EventLog>
</outputDataType>
```

## 3 Submit Bid Action

---

### 3.1 Business Scenario

Scheduling Coordinators submit bid action data on behalf of market participants who wish to participate in the CAISO Day Ahead and Real Time markets. While most Scheduling Coordinators submit their bid action data through the SIBR portal manually, some Scheduling Coordinators submit their bid action data in batch mode through an automated process.

To meet the needs for submission of bid action request data from Scheduling Coordinators, two processes can be followed for manual and batch mode, respectively:

1) Portal Process

In this process the submission is made via a CAISO Web Portal. Scheduling Coordinators submit bid action data through the portal automatically using a proxy application implemented at the portal. The proxy will send the data to SIBR for submission.

2) Direct Link Process

In this case, a Scheduling Coordinator directly invokes the submitBidAction service that resides in CAISO domain using a security mechanism. This process involves submitting bid



action xml payloads via the CAISO web service interface, but does not preclude the use of a client application for automating the process of invoking the web service

The direct link can only be established if a Scheduling Coordinator application knows the concrete information to invoke the SIBR bid action submit Web service. Since a Scheduling Coordinator application is usually outside of the CAISO firewall, a certain security mechanism shall be implemented for the process. The Scheduling Coordinator applications shall be also responsible for an XML validation prior to a data submission.

## 3.2 Service Level Agreement

The following service level agreement defines the business and technical requirements for service availability and performance.

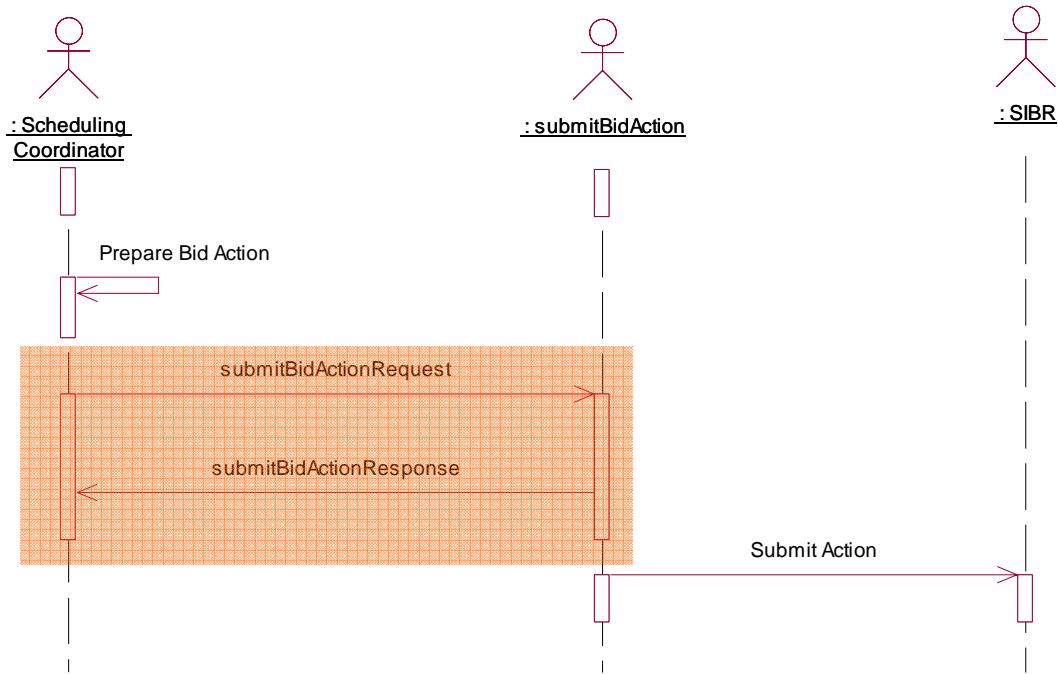
|  |   |
|--|---|
| <b>Service availability</b>  | Service level goal is 99.9%.                                      |
| <b>Expected size of payload (average and maximum)</b>                          | Less than 1 KB.   |
| <b>Expected frequency (average and maximum)</b>                                | The only action is to cancel bids. Expect this to be infrequent.  |
| <b>Longest time the service can be unavailable before business is impacted</b> | [to be determined]  |
| <b>Business impact if is unavailable</b>                                       | Schedule Coordinators utilizing the service may not cancel a bid. |
| <b>Expected response time for the service</b>                                  | [to be determined]  |
| <b>Expected time to exchange</b>   | [to be determined]  |

## 3.3 Use Model

The sequence diagram below describes the service interactions between Scheduling Coordinators and SIBR system in a direct link submission process. The data exchange follows CAISO SOA Submit messaging pattern. In this pattern, the data source system is the Scheduling Coordinator who initiates a data transaction by invoking a submitRawBidSet service provided by SIBR. The consumer of the Web service is Scheduling Coordinator or a Web portal. The consumer makes request to SIBR with raw bid data by invoking the submit Web service. The SIBR system is the provider of the Web service.

The following steps are involved in the submission process:

- 1) Scheduling Coordinator has the bid action data set ready in XML format
- 2) Scheduling Coordinator validates the data set based on the XML schema
- 3) Scheduling Coordinator invokes the submitBidAction Web service directly to send a request to SIBR with the bid action data set
- 4) SIBR returns an acknowledge message back to Scheduling Coordinator.



### 3.4 Operation Details

The service has one operation with three message types. All input and output messages are in XML format.

| Operation       | Message Types | Message                  | WSDL                 | XSD                      |
|-----------------|---------------|--------------------------|----------------------|--------------------------|
| SubmitBidAction | Input         | SubmitBidAction Request  | submitBidAction.wsdl | submitBidActiont.xsd     |
|                 | Output        | SubmitBidAction Response |                      | SubmitStandardOutput.xsd |
|                 | Fault         | faultReturnType          |                      | StandardOutput.xsd       |

### 3.5 WSDL (submitBidAction.wsdl)

```

<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions
    xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
    xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns="http://schemas.xmlsoap.org/wsdl/"
    xmlns:wsi="http://ws-i.org/schemas/conformanceClaim/"

    xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
    xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
    xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"

    targetNamespace="http://www.caiso.com/soa/2006-07-15/submitBidAction.wsdl"
    xmlns:tns="http://www.caiso.com/soa/2006-07-15/submitBidAction.wsdl"

    xmlns:typeIn="http://www.caiso.com/soa/2006-03-17/BidAction.xsd"
    xmlns:typeOut="http://www.caiso.com/soa/2006-07-15/SubmitActionStandardOutput.xsd"
    xmlns:typeFault="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">

    <wsdl:documentation>
        A web service for submission of bid action from SC and implemented at SIBR
        system side
    </wsdl:documentation>

    <!-- type elements define data types used in this wsdl document using xml
    schema -->
    <!-- note the namespaces defined matched up with the typeIn and typeOut
    defined above -->
    <wsdl:types>
        <xss:schema>
            <xs:import namespace="http://www.caiso.com/soa/2006-03-17/BidAction.xsd"
            schemaLocation="BidAction.xsd" />
        </xss:schema>
        <xss:schema>
            <xs:import namespace="http://www.caiso.com/soa/2006-07-15/SubmitActionStandardOutput.xsd"
            schemaLocation="SubmitActionStandardOutput.xsd" />
        </xss:schema>
        <xss:schema>
            <xs:import namespace="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd"
            schemaLocation="StandardOutput.xsd" />
        </xss:schema>
    </wsdl:types>

    <!-- message elements define input and output parameters -->
    <!-- a request and response case to use the data type defined in TYPE for
    payload -->
    <wsdl:message name="submitBidActionRequest">
        <wsdl:part name="bidAction" element="typeIn:BidAction">
            <wsdl:documentation>submit bid action</wsdl:documentation>
        </wsdl:part>
    </wsdl:message>
    <wsdl:message name="submitBidActionResponse">
        <wsdl:part name="returnData" element="typeOut:outputDataType">
            <wsdl:documentation>acknowledge bid action submitted</wsdl:documentation>
        </wsdl:part>
    </wsdl:message>
    <wsdl:message name="faultReturnType">

```

```

<wsdl:part name="faultReturn" element="typeFault:outputDataType">
  <wsdl:documentation>fault information</wsdl:documentation>
</wsdl:part>
</wsdl:message>

<!-- portType elements define the abstract interface of a web service -->
<!-- to use the message type defined in message above -->
<wsdl:portType name="SubmitBidAction">
  <wsdl:operation name="submitBidAction">
    <wsdl:documentation>submit bid action</wsdl:documentation>
    <wsdl:input name="bidAction" message="tns:submitBidActionRequest" />
    <wsdl:output name="returnData" message="tns:submitBidActionResponse" />
    <wsdl:fault name="faultReturn" message="tns:faultReturnType" />
  </wsdl:operation>
</wsdl:portType>

<!-- binding elements define protocols and encoding styles -->
<!-- to bind the operation defined in portType -->
<wsdl:binding name="SubmitBidAction_Binding" type="tns:SubmitBidAction">
  <soap:binding style="document"
    transport="http://schemas.xmlsoap.org/soap/http"/>
  <wsdl:operation name="submitBidAction">
    <soap:operation style="document"
      soapAction="http://www.caiso.com/soa/2006-07-15/submitBidAction"/>
    <wsdl:input name="bidAction">
      <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output name="returnData">
      <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="faultReturn">
      <soap:fault name="faultReturn" use="literal"/>
    </wsdl:fault>
  </wsdl:operation>
</wsdl:binding>

<wsdl:service name="SubmitBidActionService">
  <wsdl:port name="submitBidActionServicePort"
binding="tns:SubmitBidAction Binding">
    <soap:address location="http://www.caiso.com/soa/2006-07-
15/submitBidAction"/>
  </wsdl:port>
</wsdl:service>

</wsdl:definitions>

```

## 3.6 Submit Bid Action

### 3.6.1 Element Table

| Element               | Data Description                                     | Type     | Req'd |
|-----------------------|--|----------|-------|
| <b>Message Header</b> |  |          |       |
| TimeDate              | The dateTime, in GMT, when the payload is published. | dateTime | Yes   |

| Element                | Data Description  | Type   | Req'd |
|------------------------|---|--------|-------|
| Source                 | The source of published data.   | string | Yes   |
| <b>Message Payload</b> |   |        |       |
| <b>GeneratingBid</b>   |   |        |       |
| mrid                   | MRID stands for master resource identifier which should be globally unique. (1-32 characters) | string | No    |
| Action Request         | Type of bid action request. Valid values are:<br>CANCEL                                       | string | Yes   |
| <b>LoadBid</b>         |   |        |       |
| mrid                   | MRID stands for master resource identifier which should be globally unique. (1-32 characters) | string | No    |
| Action Request         | Type of bid action request. Valid values are:<br>CANCEL                                       | string | Yes   |
| <b>InterTieBid</b>     |   |        |       |
| mrid                   | MRID stands for master resource identifier which should be globally unique. (1-32 characters) | string | No    |
| Action Request         | Type of bid action request. Valid values are:<br>CANCEL                                       | string | Yes   |

### 3.6.2 Schema (BidAction.xsd)

```

<?xml version="1.0" encoding="UTF-8" ?>
<xsschema xmlns:m="http://www.caiso.com/soa/2006-03-17/BidAction.xsd"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  attributeFormDefault="unqualified" elementFormDefault="qualified"
  targetNamespace="http://www.caiso.com/soa/2006-03-17/BidAction.xsd">
  <xselement name="BidAction" type="m:BidAction" />
  <xsccomplexType name="BidAction">
    <xsssequence>
      <xselement minOccurs="0" name="MessageHeader"
        type="m:MessageHeader" />
      <xselement name="MessagePayload" type="m:MessagePayload"
        />
    </xsssequence>
  </xsccomplexType>
  <xsccomplexType name="MessageHeader">
    <xsssequence>
      <xselement name="TimeDate" type="xs:dateTime" />
      <xselement name="Source" type="xs:string" />
    </xsssequence>
  </xsccomplexType>
</xsschema>

```

```

</xs:sequence>
</xs:complexType>
<xs:complexType name="MessagePayload">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
      name="GeneratingBid" type="m:GeneratingBid" />
    <xs:element minOccurs="0" maxOccurs="unbounded"
      name="LoadBid" type="m:LoadBid" />
    <xs:element minOccurs="0" maxOccurs="unbounded"
      name="InterTieBid" type="m:InterTieBid" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="GeneratingBid">
  <xs:sequence>
    <xs:element minOccurs="1" name="mrpid" type="m:mrpid" />
    <xs:element minOccurs="1" maxOccurs="1"
      name="ActionRequest" type="m:BidActionActionRequest" />
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="mrpid">
  <xs:restriction base="xs:string">
    <xs:maxLength value="32" />
    <xs:minLength value="1" />
  </xs:restriction>
</xs:simpleType>
<xs:complexType name="BidActionActionRequest">
  <xs:sequence>
    <xs:element minOccurs="1" name="actionName"
      type="m:BidActionType" />
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="BidActionType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="CANCEL" />
  </xs:restriction>
</xs:simpleType>
<xs:complexType name="LoadBid">
  <xs:sequence>
    <xs:element minOccurs="1" name="mrpid" type="m:mrpid" />
    <xs:element minOccurs="1" maxOccurs="1"
      name="ActionRequest" type="m:BidActionActionRequest" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="InterTieBid">
  <xs:sequence>
    <xs:element minOccurs="1" name="mrpid" type="m:mrpid" />
    <xs:element minOccurs="1" maxOccurs="1"
      name="ActionRequest" type="m:BidActionActionRequest" />
  </xs:sequence>
</xs:complexType>
</xs:schema>

```

### 3.6.3 Example XML File (BidAction.xml)

```
<?xml version="1.0" encoding="UTF-8" ?>
```



```
<BidAction xmlns="http://www.caiso.com/soa/2006-03-17/BidAction.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.caiso.com/soa/2006-03-17/BidAction.xsd
  C:\MARKET~1\BidAction.xsd">
  <MessageHeader>
    <TimeDate>2001-07-14T09:30:47.0Z</TimeDate>
    <Source>Sample Payload</Source>
  </MessageHeader>
  <MessagePayload>
    <LoadBid>
      <mrid>RSC-02</mrid>
      <ActionRequest>
        <actionName>CANCEL</actionName>
      </ActionRequest>
    </LoadBid>
  </MessagePayload>
</BidAction>
```

### **3.7 BidAction Response**

Same as 2.8

### **3.8 Fault Return**

Same as 2.9.

## 4 Retrieve Clean Bid Set

---

### 4.1 Business Scenario

The SIBR system provides fully validated bids (clean bids) to market participants. Clean bid set data can be retrieved by invoking the retrieveCleanBidSet web service.

1. The service will be used to retrieve the bids submitted/generated through the following:
  - a. Bids submitted through SIBR GUI
  - b. Bids submitted through SIBR UI Manual Upload
  - c. Bids submitted through API
  - d. Bids auto-generated by SIBR applicable to Ruleset SIBR BR 3.9.14.6
2. The service will be used to retrieve bids for all products applicable to either DA or RT markets
3. This service will be used to retrieve bids for a single market trading period that has been closed.
4. The service will return only bids with "CL" (Clean) status. Bids with status of either V (Valid) or M (Modified) will be tagged by SIBR as "Clean" bid.
5. The service will return only bids for all resources that belong to the user, depending on the filtering criteria used.
6. The result will be filtered using any of the following criteria:
  - a. By Bid MRID
    - i. Using Bid MRID filtering criteria, the user will be able to retrieve the clean bid for resource associated with the bid MRID.
    - ii. The bid MRID generated is unique for each resource, trading period and bid activity, but associated with only 1 resource ID
    - iii. The result will include 1 "Clean" bid for a particular resource (if the resource belongs to the user) associated with the bid reference ID specified.
  - b. By Resource ID
    - i. Using By Resource ID filtering criteria, the user will be able to retrieve clean bid for the resource ID and trading period specified.

- ii. The Resource ID refers to the actual resource name known to Market Participants;
  - iii. The result will include at most 1 “Clean” bid for the specified trading period, and resource that belong to the user.
- c. By Date
- i. Using By Date filtering criteria, the user will be able to retrieve clean bid for all the resource that belongs to the user and trading period specified.
  - ii. The result will include at most 1 “Clean” bid for the specified trading period, and for all resource that belong to the user.
- d. By SC ID
- i. Using By SC ID filtering criteria, the user will be able to retrieve clean bid for all the resource that belongs to the SC ID and trading period specified that are authorized for the certificate being used.
  - ii. The result will include at most 1 “Clean” bid for the specified trading period, and for all resource that belong to the SC ID for the user.

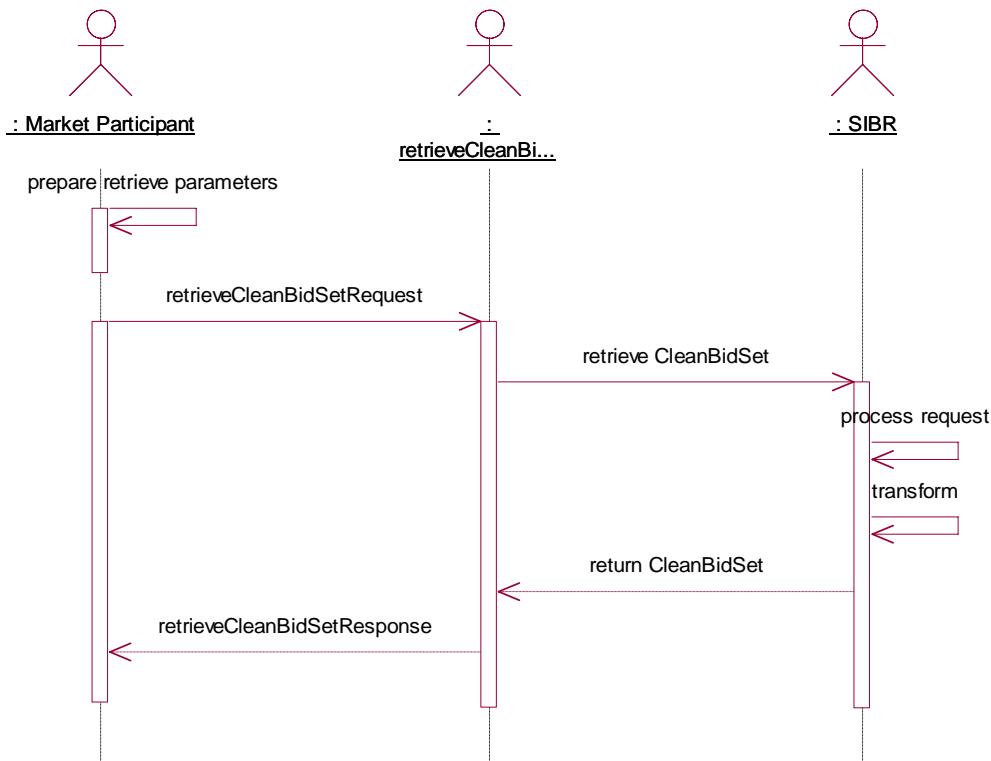
## 4.2 Service Level Agreement

The following service level agreement defines the business and technical requirements for service availability and performance.

|  |   |
|--|---|
| <b>Service availability</b>  | Service level goal is 99.9%.  |
| <b>Expected size of payload (average and maximum)</b>                          | (AVG # of bids) to (500+ maximum bids) times size of one bid  |
| <b>Expected frequency (average and maximum)</b>                                | One an hour after RTM closes, and minimum of once per day after DAM closes, per Schedule Coordinator utilizing the service. |
| <b>Longest time the service can be unavailable before business is impacted</b> | [to be determined]  |
| <b>Business impact if is unavailable</b>                                       | Schedule Coordinators utilizing the service may have difficulty submitting all their bids for the next RTM.                 |
| <b>Expected response time for the service</b>                                  | [to be determined]  |
| <b>Expected time to exchange</b>   | [to be determined]  |

### 4.3 Use Model

The sequence diagram below describes the market participants retrieving the clean bid data. There is one web service involved: retrieveCleanBidSet.



### 4.4 Operation Details

The service has one operation with three message types. All input and output messages are in XML format.

| Operation           | Message Types | Message                     | WSDL                     | XSD                    |
|---------------------|---------------|-----------------------------|--------------------------|------------------------|
| retrieveCleanBidSet | Input         | RetrieveCleanBidSetRequest  | retrieveCleanBidSet.wsdl | RequestCleanBidSet.xsd |
|                     | Output        | RetrieveCleanBidSetResponse |                          | CleanBidSet.xsd        |
|                     | Fault         | faultReturnType             |                          | StandardOutput.xsd     |

## 4.5 WSDL (*retrieveCleanBidSet.wsdl*)

////// start ////////

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions
    xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
    xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns="http://schemas.xmlsoap.org/wsdl/"
    xmlns:wsi="http://ws-i.org/schemas/conformanceClaim/"

    xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
    xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
    xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"

    targetNamespace="http://www.caiso.com/soa/2008-08-11/retrieveCleanBidSet.wsdl"
    xmlns:tns="http://www.caiso.com/soa/2008-08-11/retrieveCleanBidSet.wsdl"

    xmlns:schemaInfor="http://www.caiso.com/soa/2008-08-11/CleanBidSet.xsd"

    xmlns:typeIn="http://www.caiso.com/soa/2008-05-21/RequestCleanBidSet.xsd"
    xmlns:typeHeader="http://www.caiso.com/soa/2006-06-
13/StandardAttachmentInfor.xsd"
    xmlns:typeFault="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">

    <wsdl:documentation>
        A web service to retrieve clean bid from SIBR
    </wsdl:documentation>

    <!-- type elements define data types used in this wsdl document using xml schema -->
    <!-- note the namespaces defined matched up with the typeIn and typeOut defined
above -->
    <wsdl:types>
        <xs:schema>
            <xs:import namespace="http://www.caiso.com/soa/2006-06-
13/StandardAttachmentInfor.xsd" schemaLocation="StandardAttachmentInfor.xsd" />
        </xs:schema>
        <xs:schema>
```

```
<xs:import namespace="http://www.caiso.com/soa/2008-05-  
21/RequestCleanBidSet.xsd" schemaLocation="RequestCleanBidSet.xsd" />  
</xs:schema>  
<xs:schema>  
  <xs:import namespace="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd"  
schemaLocation="StandardOutput.xsd" />  
</xs:schema>  
</wsdl:types>  
  
<!-- message elements define input and output parameters -->  
<!-- a request and response case to use the data type defined in TYPE for payload -->  
<wsdl:message name="retrieveCleanBidSetHeader">  
  <!-- attachment wrapper -->  
  <wsdl:part name="standardAttachmentInfor"  
element="typeHeader:standardAttachmentInfor">  
    <wsdl:documentation>attachment information</wsdl:documentation>  
  </wsdl:part>  
</wsdl:message>  
<wsdl:message name="retrieveCleanBidSetRequest">  
  <wsdl:part name="requestData" type="typeIn:RequestCleanBidSet">  
    <wsdl:documentation>send request date</wsdl:documentation>  
  </wsdl:part>  
</wsdl:message>  
<wsdl:message name="retrieveCleanBidSetResponse">  
  <wsdl:part name="cleanBidSet_attachment" type="xs:base64Binary">  
    <wsdl:documentation>return market meter data</wsdl:documentation>  
  </wsdl:part>  
</wsdl:message>  
<wsdl:message name="faultReturnType">  
  <wsdl:part name="faultReturn" element="typeFault:outputDataType">  
    <wsdl:documentation>fault information</wsdl:documentation>  
  </wsdl:part>  
</wsdl:message>  
  
<!-- portType elements define the abstract interface of a web service -->  
<!-- to use the message type defined in message above -->  
<wsdl:portType name="retrieveCleanBidSet">  
  <wsdl:operation name="retrieveCleanBidSet">  
    <wsdl:documentation>retrieve clean bid set</wsdl:documentation>  
    <wsdl:input message="tns:retrieveCleanBidSetRequest" />  
    <wsdl:output message="tns:retrieveCleanBidSetResponse" />
```

```
<wsdl:fault name="faultReturn" message="tns:faultReturnType" />
</wsdl:operation>
</wsdl:portType>

<!-- binding elements define protocols and encoding styles -->
<!-- to bind the operation defined in portType -->
<wsdl:binding name="retrieveCleanBidSet_Binding" type="tns:retrieveCleanBidSet">
  <soap:binding style="rpc"
    transport="http://schemas.xmlsoap.org/soap/http"/>
  <wsdl:operation name="retrieveCleanBidSet">
    <soap:operation style="rpc"
      soapAction="http://www.caiso.com/soa/2008-05-21/retrieveCleanBidSet"/>
    <wsdl:input>
      <soap:body use="literal" namespace="http://www.caiso.com/soa/2008-05-
21/retrieveCleanBidSet"/>
    </wsdl:input>
    <wsdl:output>
      <mime:multipartRelated>
        <mime:part>
          <soap:body use="literal" namespace="http://www.caiso.com/soa/2008-05-
21/retrieveCleanBidSet"/>
        </mime:part>
        <mime:part>
          <mime:content part="cleanBidSet_attachment"
            type="application/octetstream"/>
        </mime:part>
      </mime:multipartRelated>
      <soap:header message="tns:retrieveCleanBidSetHeader"
        part="standardAttachmentInfor" use="literal"
        wsdl:required="true"/>
    </wsdl:output>
    <wsdl:fault name="faultReturn">
      <soap:fault name="faultReturn" use="literal"/>
    </wsdl:fault>
  </wsdl:operation>
</wsdl:binding>

<wsdl:service name="retrieveCleanBidSetService">
  <wsdl:port name="retrieveCleanBidSetServicePort"
    binding="tns:retrieveCleanBidSet_Binding">
```

```

<soap:address location="http://www.caiso.com/soa/2008-05-
21/retrieveCleanBidSet"/>
</wsdl:port>
</wsdl:service>

</wsdl:definitions>

```

////// end ///////////////

## 4.6 Clean Bid Set Request

### 4.6.1 Element Table

| Element  | Data Description  | Type     | Req'd     |
|--|---|----------|-----------|
| <b>Bid_MarketTimeInterval</b>                                      | <b>Request using Market Type</b>  |          | <b>No</b> |
| Bid_MarketTimeInterval. MarketStartTime                            | Time of day when Market Definition starts.  | dateTime | Yes       |
| Bid_MarketTimeInterval. MarketEndTime                              | Time of day when Market Definition ends.  | dateTime | Yes       |
| Bid_MarketTimeInterval. marketType                                 | Market Type to be used:<br>DAM<br>RTM   | string   | Yes       |
| <b>Bid_SchedulingCoordinatorMarketTimeInterval</b>                 | <b>Request using SC ID</b>  |          | <b>No</b> |
| Bid_SchedulingCoordinatorMarketTimeInterval. MarketStartTime       | Time of day when Market Definition starts.  | dateTime | Yes       |
| Bid_SchedulingCoordinatorMarketTimeInterval. MarketEndTime         | Time of day when Market Definition ends.  | dateTime | Yes       |
| Bid_SchedulingCoordinatorMarketTimeInterval. marketType            | Market Type to be used:<br>DAM<br>RTM   | string   | Yes       |
| Bid_SchedulingCoordinatorMarketTimeInterval. schedulingCoordinator | SC ID to be used with Market Type   | string   | Yes       |
| <b>Bid_BidIDMarketTimeInterval</b>                                 | <b>Request using Bid ID(MRID)</b>   |          | <b>No</b> |
| Bid_BidIDMarketTimeInterval. BidID                                 | BidID = MRID which stands for master object identifier which should be globally unique. | string   | Yes       |
| <b>Bid_ResourceIDMarketTimeInterval</b>                            | <b>Request using Resource ID</b>  |          | <b>No</b> |

| Element  | Data Description   | Type     | Req'd |
|--|--|----------|-------|
| Bid_ResourceIDMarketTimeInterval.<br>MarketStartTime | Time of day when Market Definition starts.   | dateTime | Yes   |
| Bid_ResourceIDMarketTimeInterval.<br>MarketEndTime   | Time of day when Market Definition ends.   | dateTime | Yes   |
| Bid_MarketTimeInterval.<br>marketType                | Market Type to be used:<br>DAM<br>RTM  | string   | Yes   |
| Bid_ResourceIDMarketTimeInterval.<br>ResourceID      | ResourceID = MRID which stands for master object identifier which should be globally unique. | string   | Yes   |

#### 4.6.2 Schema (RequestCleanBidSet.xsd)

```
//////////// start //////////

<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2007 sp2 (http://www.altova.com) by Dagmar Haller
(California ISO) -->
<x:schema xmlns="http://www.caiso.com/soa/2008-05-21/RequestCleanBidSet.xsd"
xmlns:x="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://www.caiso.com/soa/2008-05-21/RequestCleanBidSet.xsd"
elementFormDefault="qualified" attributeFormDefault="unqualified">
  <x:element name="RequestCleanBidSet" type="RequestCleanBidSet"/>
  <x:complexType name="RequestCleanBidSet">
    <x:choice>
      <x:element name="Bid_MarketTimeInterval"
type="Bid_MarketTimeInterval" minOccurs="0"/>
      <x:element
name="Bid_SchedulingCoordinatorMarketTimeInterval"
type="Bid_SchedulingCoordinatorMarketTimeInterval" minOccurs="0"/>
        <x:element name="Bid_BidIDMarketTimeInterval"
type="Bid_BidIDMarketTimeInterval" minOccurs="0"/>
        <x:element name="Bid_ResourceIDMarketTimeInterval"
type="Bid_ResourceIDMarketTimeInterval" minOccurs="0"/>
    </x:choice>
  </x:complexType>
  <x:simpleType name="MarketType">
    <x:restriction base="xs:string">
      <x:enumeration value="DAM"/>
    </x:restriction>
  </x:simpleType>
</x:schema>
```

```

                <xs:enumeration value="RTM"/>
            </xs:restriction>
        </xs:simpleType>
<xs:complexType name="Bid_MarketTimeInterval">
    <xs:sequence>
        <xs:element name="MarketStartTime" type="xs:dateTime"/>
        <xs:element name="MarketEndTime" type="xs:dateTime"/>
        <xs:element name="marketType" type="MarketType"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="Bid_SchedulingCoordinatorMarketTimeInterval">
    <xs:sequence>
        <xs:element name="MarketStartTime" type="xs:dateTime"/>
        <xs:element name="MarketEndTime" type="xs:dateTime"/>
        <xs:element name="marketType" type="MarketType"/>
        <xs:element name="schedulingCoordinator" type="xs:string"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="Bid_BidIDMarketTimeInterval">
    <xs:sequence>
        <xs:element name="BidID" type="xs:string"
maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="Bid_ResourceIDMarketTimeInterval">
    <xs:sequence>
        <xs:element name="MarketStartTime" type="xs:dateTime"/>
        <xs:element name="MarketEndTime" type="xs:dateTime"/>
        <xs:element name="marketType" type="MarketType"/>
        <xs:element name="ResourceID" type="xs:string"
maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
</xs:schema>
```

////////// end /////////////

## 4.7 Clean Bid Set Response

### 4.7.1 Element Table

| Element                | Data Description   | Type     | Req'd |
|------------------------|--|----------|-------|
| <b>Message Header</b>  |  |          |       |
| TimeDate               | The dateTime, in GMT, when the payload is published.   | dateTime | Yes   |
| Source                 | The source of published data.  | string   | Yes   |
| <b>Message Payload</b> |  |          |       |
| <b>GeneratingBid</b>   |  |          |       |
| name                   | Unique name of generating bid. (1-32 characters)   | string   | No    |
| mrid                   | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string   | No    |
| lastModified           | Time and date the document was last modified. Documents may potentially be modified many times during their lifetime.                                | dateTime | No    |
| startTime              | Start time and date for which bid applies.   | dateTime | Yes   |
| stopTime               | Stop time and date for which bid is applies.   | dateTime | Yes   |
| marketType             | The market type, DAM or RTM.   | string   | Yes   |
| energyMaxDay           | Maximum amount of energy per day which can be produced during the trading period in MWh.   | float    | No    |
| energyMinDay           | Minimum amount of energy per day which has to be produced during the trading period in MWh.  | float    | No    |
| startUpsMaxDay         | Maximum number of startups per day.  | integer  | No    |
| contingencyAvailFlag   | Contingent operating reserve availability. Valid value = YES or NO. Resource is available to participate with capacity only in contingency dispatch. | string   | No    |
| bidStatus              | Bid status:<br>CL – Clean (CL is the only Status that will be returned with this request. The XSD is modeled from the BidResults.)                   | string   | No    |
| CreatedISO             | Implies if the bid was created by the ISO versus submitted by an SC  | string   | no    |

| Element                                    | Data Description  | Type   | Req'd |
|--|---|--------|-------|
| maximumEconomicMW                          | Maximum high economic MW limit, that should not exceed the maximum operating MW limit.  | float  | No    |
| minimumEconomicMW                          | Low economic MW limit that must be greater than or equal to the minimum operating MW limit.   | float  | No    |
| noLoadCost                                 | Resource fixed no load cost.  | float  | No    |
| RegisteredGenerator.mrid                   | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string | Yes   |
| RegisteredGenerator.AggregatedPnode.mrid   | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string | Yes   |
| RegisteredGenerator.IndividualPnode.mrid   | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string | Yes   |
| SchedulingCoordinator.mrid                 | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string | Yes   |
| ProductBid.description                     | Description of Product Bid. (1-32 characters)   | string | No    |
| ProductBid.mrid                            | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string | No    |
| ProductBid.MarketProduct.description       | Description of Market Product. (1-32 characters)  | string | No    |
| ProductBid.MarketProduct.marketProductType | Market product type. Valid values are:<br>EN – Energy type<br>RU – Regulation up<br>RD – Regulation down<br>SR – spinning reserve<br>NR – Non-spinning reserve<br>RC – Residual Unit Commitment<br>LFU – Load Following Up<br>LFD – Load Following Down   | string | Yes   |
| ProductBid.MarketProduct.selfSchedType     | Self schedule bid contract type. Valid values are:<br>PT – Price Taker<br>LPT – Lower Price Taker<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right<br>RMT – Regulatory must take<br>RA – Resource Adequacy<br>SP – Self Provision<br>BAS – Base Load<br>LOF – Load following<br>WHL - Wheeling | string | No    |
| ProductBid.BidSelfSched.description        | Description of Bid Self Sched. (1-32 characters)  | string | No    |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.BidSelfSched.timeIntervalStart            | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.timeIntervalEnd              | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.selfSchedMw                  | Self Schedule MW value for the referenced commodity.  | float    | No    |
| ProductBid.BidSelfSched.selfSchedSptResource         | PT Export Self Sched Support Resource   | String   | No    |
| ProductBid.BidSelfSched.balancingFlag                | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR is balanced with another self-schedule using the same TR ID. | YesNo    | No    |
| ProductBid.BidSelfSched.priorityFlag                 | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM.                          | YesNo    | No    |
| ProductBid.BidSelfSched.wheelingTransactionReference | A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources   | String   | No    |
| ProductBid.BidSelfSched.referenceType                | Indication of which class is referenced by the self schedule. <ul style="list-style-type: none"><li>• ETC</li><li>• TOR</li><li>• WHL</li><li>• RMT</li></ul> *Functionality not fully supported.                       | String   | No    |
| ProductBid.BidSelfSched.pumpSelfSchedMw              | Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null, then the unit is in pumping mode.  | float    | No    |
| ProductBid.BidSelfSched.AdjacentCASet/mrid           | Groups Adjacent Control Areas.  | String   | No    |
| ProductBid.BidSelfSched.HostControlArea/mrid         | A HostControlArea has a set of tie points and a set of generator controls (i.e., AGC). It also has a total load, including transmission and distribution losses.  | String   | No    |
| ProductBid.BidSelfSched.ContractRight.description    | Description of Contract Right. (1-32 characters)  | string   | No    |
| ProductBid.BidSelfSched.ContractRight.mrid           | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | Yes   |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.UnitSchedule.timeIntervalStart                      | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.UnitSchedule.timeIntervalEnd                        | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.UnitSchedule.parameterID                            | Parameter ID. Valid values are:<br>HOURLY_PREDISPATCH – hourly pre-dispatch<br>PUMPING_LEVEL – pumping level<br>PUMPING_COST<br>PUMPING_SHUTDOWN_COST | string   | Yes   |
| ProductBid.UnitSchedule.parameterType                          | Indication of the type of parameter being defined (STRING or FLOAT).  | string   | Yes   |
| ProductBid.UnitSchedule.parameterValue                         | Parameter value which replaces corresponding default values from input bid data.  | float    | No    |
| ProductBid.UnitSchedule.parameterStringValue                   | If ProductBid.UnitSchedule = STRING then value = YES. Else value = NO.  | string   | No    |
| ProductBid.BidSchedule.description                             | Description of Bid Schedule. (1-32 characters)  | string   | No    |
| ProductBid.BidSchedule.timeIntervalStart                       | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSchedule.timeIntervalEnd                         | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.description               | Description of Bid Price Curve. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.mrid                      | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.xAxisData  | The data value of the X-axis variable..   | float    | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.y1AxisData | The data value of the Y-axis variable, depending on the Y-axis units.   | float    | Yes   |
| ProductBid.BidDistributionFactor.timeIntervalStart             | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidDistributionFactor.timeIntervalEnd               | End of the time interval n which bid is valid.  | dateTime | Yes   |

| Element   | Data Description   | Type     | Req'd |
|---|--|----------|-------|
| ProductBid.BidDistributionFactor.PnodeDistributionFactor.factor.value         | Used to calculate "participation" of Pnode in an AggregatePnode. For example, for regulation region this factor is 1 and total sum of all factors for a specific regulation region does not have to be 1. For pricing zone the total sum of all factors has to value must be => 0 and <= 1 | float    | Yes   |
| ProductBid.BidDistributionFactor.PnodeDistributionFactor.IndividualPnode.mrid | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string   | Yes   |
| RampRateCurve.description   | Description of Ramp Rate Curve. (1-32 characters)  | string   | No    |
| RampRateCurve.rampRateType  | [Not supported in MRTU Release 1.]   | string   | No    |
| RampRateCurve.constraintRampType  | Trading Hour of Trading Interval.  | string   | No    |
| RampRateCurve.CurveSched.Data.xAxisData                                       | The data value of the X-axis variable.,  | float    | No    |
| RampRateCurve.CurveSched.Data.y1AxisData                                      | The data value of the Y-axis variable, depending on the Y-axis units.  | float    | Yes   |
| StartUpCostCurve.description  | Description of Start Up CostCurve. (1-32 characters)   | string   | No    |
| StartUpCostCurve.CurveSched.Data.xAxisData                                    | The data value of the X-axis variable, depending on the X-axis units.  | float    | Yes   |
| StartUpCostCurve.CurveSched.Data.y1AxisData                                   | The data value of the Y-axis variable, depending on the Y-axis units.  | float    | Yes   |
| StartUpTimeCurve.description  | Description of Start Up Time Curve. (1-32 characters)  | string   | No    |
| StartUpTimeCurve.CurveSched.Data.xAxisData                                    | The data value of the X-axis variable, depending on the X-axis units.  | float    | Yes   |
| StartUpTimeCurve.CurveSched.Data.y1AxisData                                   | The data value of the Y-axis variable, depending on the Y-axis units.  | float    | Yes   |
| <b>InterTieBid</b>  |  |          |       |
| name  | Unique name of intertie bid. (1-32 characters)   | string   | No    |
| mrid  | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string   | No    |
| lastModified  | Time and date the document was last modified.  | dateTime | No    |
| startTime   | Start time and date for which bid applies.   | dateTime | Yes   |
| stopTime  | Stop time and date for which bid is applies.   | dateTime | Yes   |

| Element                                    | Data Description  | Type    | Req'd |
|--|---|---------|-------|
| marketType                                 | The market type, DAM or RTM.  | string  | Yes   |
| contingencyAvailFlag                       | Contingent operating reserve availability. Valid value = YES or NO. Resource is available to participate with capacity only in contingency dispatch.  | string  | No    |
| bidStatus                                  | Bid Status:<br>CL – Clean -   | string  | No    |
| CreatedISO                                 | Implies if the bid was created by the ISO versus submitted by an SC   | string  | no    |
| MinHourlyBlock                             | The Registered upper bound of MHB for an Inter-Tie Resource   | integer | No    |
| RegisteredInterTie.mrid                    | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string  | Yes   |
| RegisteredInterTie.AggregatedPnode.mrid    | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string  | Yes   |
| RegisteredInterTie.IndividualPnode.mrid    | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string  | Yes   |
| SchedulingCoordinator.mrid                 | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string  | Yes   |
| ProductBid.description                     | Description of Product Bid. (1-32 characters)   | string  | No    |
| ProductBid.mrid                            | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string  | No    |
| ProductBid.MarketProduct.description       | Description of Market Product. (1-32 characters)  | string  | No    |
| ProductBid.MarketProduct.marketProductType | Market product type. Valid values are:<br>EN – Energy type<br>RU – Regulation up<br>RD – Regulation down<br>SR – spinning reserve<br>NR – Non-spinning reserve<br>RC – Residual Unit Commitment<br>LFU – Load Following Up<br>LFD – Load Following Down | string  | Yes   |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.MarketProduct.selfSchedType               | Self schedule bid contract type. Valid values are:<br>PT – Price Taker<br>LPT – Lower Price Taker<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right<br>RMT – Regulatory Must Take<br>SP – Self Provision<br>RA – Resource Adequacy<br>BAS – Base Load<br>LOF – Load Following<br>WHL - Wheeling | string   | No    |
| ProductBid.BidSelfSched.description                  | Description of Bid Self Sched. (1-32 characters)  | string   | No    |
| ProductBid.BidSelfSched.mrid                         | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.timeIntervalStart            | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.timeIntervalEnd              | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.selfSchedMw                  | Self Schedule MW value for the referenced commodity.  | float    | No    |
| ProductBid.BidSelfSched.selfSchedSptResource         | PT Export Self Sched Support Resource   | String   | No    |
| ProductBid.BidSelfSched.balancingFlag                | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR is balanced with another self-schedule using the same TR ID.   | YesNo    | No    |
| ProductBid.BidSelfSched.priorityFlag                 | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM.  | YesNo    | No    |
| ProductBid.BidSelfSched.wheelingTransactionReference | A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources   | String   | No    |
| ProductBid.BidSelfSched.referenceType                | Indication of which class is referenced by the self schedule. <ul style="list-style-type: none"><li>• ETC</li><li>• TOR</li><li>• WHL</li><li>RMT</li></ul>   | String   | No    |

| Element   | Data Description   | Type     | Req'd |
|---|--|----------|-------|
| ProductBid.BidSelfSched.pumpSelfSchedMw           | Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null, then the unit is in pumping mode.   | float    | No    |
| ProductBid.BidSelfSched.AdjacentCASet/mrid        | Goups Adjacent Control Areas.  | String   | No    |
| ProductBid.BidSelfSched.HostControlArea/mrid      | A HostControlArea has a set of tie points and a set of generator controls (i.e., AGC). It also has a total load, including transmission and distribution losses. | String   | No    |
| ProductBid.BidSelfSched.ContractRight.description | Description of Contract Right. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.ContractRight.mrid        | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string   | Yes   |
| ProductBid.UnitSchedule.timeIntervalStart         | Start of the time interval in which bid is valid.  | dateTime | Yes   |
| ProductBid.UnitSchedule.timeIntervalEnd           | End of the time interval in which bid is valid.  | dateTime | Yes   |
| ProductBid.UnitSchedule.parameterID               | Parameter ID. Valid values are:<br>HOURLY_PREDISPATCH<br>PUMPING_LEVEL<br>PUMPING_COST<br>PUMPING_SHUTDOWN_COST  | string   | Yes   |
| ProductBid.UnitSchedule.parameterType             | Indication of the type of parameter being defined (STRING or FLOAT).   | string   | Yes   |
| ProductBid.UnitSchedule.parameterValue            | Parameter value which replaces corresponding default values from input bid data.   | float    | No    |
| ProductBid.UnitSchedule.parameterStringValue      | If ProductBid.UnitSchedule = STRING then value = YES. Else value = NO.   | string   | No    |
| ProductBid.BidSchedule.description                | Description of Bid Schedule. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.timeIntervalStart          | Start of the time interval in which bid is valid.  | dateTime | Yes   |
| ProductBid.BidSchedule.timeIntervalEnd            | End of the time interval in which bid is valid.  | dateTime | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.description  | Description of Bid Price Curve. (1-32 characters)  | string   | No    |

| Element  | Data Description   | Type     | Req'd |
|--|--|----------|-------|
| ProductBid.BidSchedule.BidPriceCurve.mrid                      | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.xAxisData  | The data value of the X-axis variable.   | float    | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.y1AxisData | The data value of the Y-axis variable, depending on the Y-axis units.<br>Pattern value = [\d]+.\.?[\d]?\d?   | float    | Yes   |
| RampRateCurve.description                                      | Description of Ramp Rate Curve. (1-32 characters)  | string   | No    |
| RampRateCurve.rampRateType                                     | [Not supported in MRTU Release 1.]   | string   | No    |
| RampRateCurve.constraintRampType                               | Trading Hour of Trading Interval.  | string   | No    |
| RampRateCurve.CurveSchedData.xAxisData                         | The data value of the X-axis variable..  | float    | No    |
| RampRateCurve.CurveSchedData.y1AxisData                        | The data value of the Y-axis variable, depending on the Y-axis units.  | float    | Yes   |
| <b>LoadBid</b>   |  |          |       |
| name   | Unique name for Load Bid. (1-32 characters)  | string   | No    |
| mrid   | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string   | No    |
| startTime  | Start time and date for which bid applies.   | dateTime | Yes   |
| stopTime   | Stop time and date for which bid is applies.   | dateTime | Yes   |
| marketType   | The market type, DAM or RTM.   | string   | Yes   |
| startUpsMaxDay   | Maximum number of startups per day.  | integer  | No    |
| contingencyAvailFlag   | Contingent operating reserve availability. Valid value = YES or NO. Resource is available to participate with capacity only in contingency dispatch. | string   | No    |
| bidStatus  | Bid status:<br>CL - Clean  | string   | No    |
| CreatedISO   | Implies if the bid was created by the ISO versus submitted by an SC  | string   | no    |
| pickUpRampRate.value   | Maximum rate load may be restored (MW/minute).   | float    | No    |

| Element                                    | Data Description   | Type   | Req'd |
|--|--|--------|-------|
| pickUpRampRate.units                       | The rate at which a Participating Load Resource can increase its electric power consumption in (MW/Min)  | string | No    |
| RegisteredLoad.mrid                        | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string | Yes   |
| RegisteredLoad.AggregatedPnode.mrid        | An aggregated pricing node is a specialized type of pricing node used to model items such as System Zone, Default Price Zone, Custom Price Zone, Control Area, Aggregated Generation, Aggregated Participating Load, Aggregated Non-Participating Load, Trading.<br><br>MRID stands for master resource identifier which should be globally unique. (1-32 characters). | string | Yes   |
| RegisteredLoad.IndividualPnode.mrid        | MRID stands for master resource identifier which should be globally unique. (1-32 characters).   | string | Yes   |
| SchedulingCoordinator.mrid                 | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string | Yes   |
| ProductBid.description                     | Description of Product Bid. (1-32 characters)  | string | No    |
| ProductBid.MarketProduct.description       | Description of Market Product. (1-32 characters)   | string | No    |
| ProductBid.mrid                            | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string | No    |
| ProductBid.MarketProduct.marketProductType | Market product type. Valid values are:<br>EN – Energy type<br>RU – Regulation up<br>RD – Regulation down<br>SR – spinning reserve<br>NR – Non-spinning reserve<br>RC – Residual Unit Commitment<br>LFU – Load Following Up<br>LFD – Load Following Down  | string | Yes   |
| ProductBid.MarketProduct.selfSchedType     | Self schedule bid contract type. Valid values are:<br>PT – Price Taker<br>LPT – Lower Price Taker<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right<br>RMT – Regulatory Must Take<br>SP – Self Provision<br>RA – Resource Adequacy<br>BAS – Base Load<br>LOF – Load Following<br>WHL – Wheeling  | string | No    |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.BidSelfSched.description                  | Description of Bid Self Schedule. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.mrid                         | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.timeIntervalStart            | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.timeIntervalEnd              | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.selfSchedMw                  | Self Schedule MW value for the referenced commodity   | float    | No    |
| ProductBid.BidSelfSched.selfSchedSptResource         | PT Export Self Sched Support Resource   | String   | No    |
| ProductBid.BidSelfSched.balancingFlag                | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR is balanced with another self-schedule using the same TR ID. | YesNo    | No    |
| ProductBid.BidSelfSched.priorityFlag                 | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM.                          | YesNo    | No    |
| ProductBid.BidSelfSched.wheelingTransactionReference | A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources   | String   | No    |
| ProductBid.BidSelfSched.referenceType                | Indication of which class is referenced by the self schedule. <ul style="list-style-type: none"> <li>• ETC</li> <li>• TOR</li> <li>• WHL</li> <li>• RMT</li> </ul>  | String   | No    |
| ProductBid.BidSelfSched.pumpSelfSchedMw              | Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null, then the unit is in pumping mode.  | float    | No    |
| ProductBid.BidSelfSched.AdjacentCASet/mrid           | Groups Adjacent Control Areas.  | String   | No    |
| ProductBid.BidSelfSched.HostControlArea/mrid         | A HostControlArea has a set of tie points and a set of generator controls (i.e., AGC). It also has a total load, including transmission and distribution losses.  | String   | No    |
|  |   |          |       |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.BidSelfSched.ContractRight.description              | Description of Contract Right. (1-32 characters)  | string   | No    |
| ProductBid.BidSelfSched.ContractRight.mrid                     | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | Yes   |
| ProductBid.UnitSchedule.timeIntervalStart                      | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.UnitSchedule.timeIntervalEnd                        | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.UnitSchedule.parameterID                            | Parameter ID. Valid values are:<br>HOURLY_PREDISPATCH – hourly pre-dispatch<br>PUMPING_LEVEL – pumping level<br>PUMPING_COST<br>PUMPING_SHUTDOWN_COST | string   | Yes   |
| ProductBid.UnitSchedule.parameterType                          | Indication of the type of parameter being defined (STRING or FLOAT).  | string   | Yes   |
| ProductBid.UnitSchedule.parameterValue                         | Parameter value which replaces corresponding default values from input bid data.  | float    | No    |
| ProductBid.UnitSchedule.parameterStringValue                   | If ProductBid.UnitSchedule = STRING then value = YES. Else value = NO.  | string   | No    |
| ProductBid.BidSchedule.description                             | Description of Bid Schedule. (1-32 characters)  | string   | No    |
| ProductBid.BidSchedule.timeIntervalStart                       | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSchedule.timeIntervalEnd                         | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.description               | Description of Bid Price Curve. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.mrid                      | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.xAxisData  | The data value of the X-axis variable..   | float    | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.y1AxisData | The data value of the Y-axis variable, depending on the Y-axis units.   | float    | Yes   |
| <b>MarketRun</b>   |   |          |       |

| Element     | Data Description  | Type   | Req'd |
|-------------|---|--------|-------|
| marketRunID | A unique market identifier. The market ID of the instance of a planned market.            | string | Yes   |
| marketID    | Market ID of the planned market referring to the ID of the instance of the PlannedMarket. | string | No    |

#### 4.7.2 Schema (CleanBidSet.xsd)

///////// start //////////

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:m="http://www.caiso.com/soa/2008-08-11/CleanBidSet.xsd"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.caiso.com/soa/2008-08-11/CleanBidSet.xsd"
  elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xs:element name="CleanBidSet" type="m:CleanBidSet"/>
  <xs:complexType name="CleanBidSet">
    <xs:sequence>
      <xs:element name="MessageHeader" type="m:MessageHeader"
        minOccurs="0"/>
      <xs:element name="MessagePayload"
        type="m:MessagePayload"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="MessageHeader">
    <xs:annotation>
      <xs:documentation>Message header containing descriptive
      information about the message.</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="TimeDate" type="xs:dateTime">
        <xs:annotation>
          <xs:documentation>Application level relevant time
          and date for when this instance of the message was produced.</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="Source" type="xs:string">
        <xs:annotation>
          <xs:documentation>Source system that publishes
          the message. For CAISO, examples include ADS, ALFS, CAP, CRR, EMS, ETCC,
          FNM, IFM, MF, PI, RLC, RTM, SaMC, SIBR, SLIC, etc.</xs:documentation>
        </xs:annotation>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="MessagePayload">
    <xs:sequence>
```

```

<xs:element name="GeneratingBid" type="m:GeneratingBid"
minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="InterTieBid" type="m:InterTieBid"
minOccurs="0" maxOccurs="unbounded">
        <xs:annotation>
            <xs:documentation>This class represents the inter
tie bid</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="LoadBid" type="m:LoadBid" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:element name="MarketRun" type="m:MarketRunMsg">
        <xs:annotation>
            <xs:documentation>This class represent an actual
instance of a planned market. For example, a DA market opens with the Bid Submission,
ends with the closing of the Bid Submission. The market run represent the whole
process</xs:documentation>
        </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="GeneratingBid">
    <xs:sequence>
        <xs:element name="name" type="xs:string" minOccurs="0">
            <xs:annotation>
                <xs:documentation>Unique name among objects
owned by the same parent.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="mrid" type="xs:string" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="lastModified" type="xs:dateTime"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Time and date the document
was last modified. Documents may potentially be modified many times during their
lifetime.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>

```

```

        </xs:annotation>
    </xs:element>
    <xs:element name="startTime" type="xs:dateTime">
        <xs:annotation>
            <xs:documentation>Start time and date for which
bid applies.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="stopTime" type="xs:dateTime">
        <xs:annotation>
            <xs:documentation>Stop time and date for which
bid is applicable.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="marketType" type="m:MarketType">
        <xs:annotation>
            <xs:documentation>The market type, DAM or
RTM.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="energyMaxDay" type="xs:float"
minOccurs="0">
        <xs:annotation>
            <xs:documentation>Maximum amount of energy
per day which can be produced during the trading period in MWh</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="energyMinDay" type="xs:float"
minOccurs="0">
        <xs:annotation>
            <xs:documentation>Minimum amount of energy
per day which has to be produced during the trading period in MWh</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="startUpsMaxDay" type="xs:integer"
minOccurs="0">
        <xs:annotation>
            <xs:documentation>Maximum number of startups
per day.</xs:documentation>
        </xs:annotation>
    </xs:element>

```

```

<xs:element name="contingencyAvailFlag" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>CAISO Extension contingent
operating reserve availability (Yes/No). Resource is available to participate with
capacity only in contingency dispatch. CleanBid Message: IFM, RUC, RTD,
RTPD</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="bidStatus" type="m:bidStatus"
minOccurs="0"/>
<xs:element name="createdISO" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>A Yes indicates that this bid
was created by the ISO.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="maximumEconomicMW" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Maximum high economic MW
limit, that should not exceed the maximum operating MW limit</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="minimumEconomicMW" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Low economic MW limit that
must be greater than or equal to the minimum operating MW limit</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="noLoadCost" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Resource fixed no load
cost.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="RegisteredGenerator"
type="m:RegisteredGenerator" minOccurs="0"/>

```

```

<xs:element name="SchedulingCoordinator"
type="m:SchedulingCoordinatorNmReq">
    <xs:annotation>
        <xs:documentation>All CAISO market participants
are represented by Scheduling Coordinators (SCs) that are registered with the CAISO
(section 5.1.2 IFM SRS). One participant can register multiple SCs with the CAISO.
Many participants can do business with the CAISO using a single SC. Each generator
resource can only be scheduled by one SC. One SC can schedule multiple generators. A
load scheduling point can be used by multiple SCs. Each SC can schedule load at
multiple scheduling points. Each SC can have more than one load schedule at any load
scheduling point as long as each load schedule at the same load scheduling point has a
separate resource ID and settlement-quality meter. An inter-tie scheduling point can be
used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling
points. An SC can have multiple interchange schedules at the same inter-tie scheduling
point by assigning a unique interchange identifier to each interchange schedule.
Currently, the type of SC includes: Scheduling Coordinator (MDAS certified) SC of
Inter-SC Trades Only (not MDAS certified) SC & FTR holder SC, FTR holder, TO ,
& UDC.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="ProductBid" type="m:ProductBid_G"
maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Component of a bid that
pertains to one market product.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="RampRateCurve" type="m:RampRateCurve"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Ramp rate as a function of
resource MW output</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="StartUpCostCurve"
type="m:StartUpCostCurve" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Startup costs and time as a
function of down time. Relationship between unit startup cost (Y1-axis) vs. unit elapsed
down time (X-axis). For CAISO, the Y2-axis is not used.</xs:documentation>
    </xs:annotation>

```

```

        </xs:element>
        <xs:element name="StartUpTimeCurve"
type="m:StartUpTimeCurve" minOccurs="0">
            <xs:annotation>
                <xs:documentation>Startup time curve as a function
of down time, where time is specified in minutes. Relationship between unit startup time
(Y1-axis) vs. unit elapsed down time (X-axis).</xs:documentation>
            </xs:annotation>
        </xs:element>
        </xs:sequence>
    </xs:complexType>
<xs:simpleType name="MarketType">
    <xs:annotation>
        <xs:documentation>market type</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
        <xs:enumeration value="DAM"/>
        <xs:enumeration value="RTM"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="YesNo">
    <xs:restriction base="xs:string">
        <xs:enumeration value="YES"/>
        <xs:enumeration value="NO"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="bidStatus">
    <xs:restriction base="xs:string">
        <xs:enumeration value="CL"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="RegisteredGenerator">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="AggregatedPnode"
type="m:AggregatedPnodeNmReq" minOccurs="0">

```

```

<xs:annotation>
    <xs:documentation>An aggregated pricing node is a
specialized type of pricing node used to model items such as System Zone, Default Price
Zone, Custom Price Zone, Control Area, Aggregated Generation, Aggregated
Participating Load, Aggregated Non-Participating Load, Trading Hub, DCA
Zone</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="IndividualPnode"
type="m:IndividualPnodeNmReq" minOccurs="0">
    <xs:annotation>
        <xs:documentation>CleanBid Message: IFM, RUC,
RTP, RTPD.</xs:documentation>
        </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:simpleType name="mrid">
    <xs:restriction base="xs:string">
        <xs:maxLength value="32"/>
        <xs:minLength value="1"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="AggregatedPnodeNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
        </xs:sequence>
</xs:complexType>
<xs:complexType name="IndividualPnodeNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>

```

```

        </xs:sequence>
    </xs:complexType>
<xs:complexType name="SchedulingCoordinatorNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="ProductBid_G">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="mrid" type="m:mrid" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="MarketProduct"
type="m:BidSetMarketProduct">
            <xs:annotation>
                <xs:documentation>MarketProduct provides the
details about the market product type and self schedule type</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="BidSelfSched" type="m:BidSelfSched"
minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>
                <xs:documentation>CAISO Extension Defines self
schedule values to be used for specified time intervals</xs:documentation>
            </xs:annotation>
        </xs:element>
    
```

```

<xs:element name="UnitSchedule"
type="m:UnitScheduleFloatStringOpt" minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>CAISO Extension Defines
values that can be changed hourly within a daily bid. Provides indication of parameter
type (string or float) and then a location for the value.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="BidSchedule" type="m:BidSchedule"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>CAISO Extension Defines bid
schedules to allow a product bid to use specified bid price curves for different time
intervals.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="BidDistributionFactor"
type="m:BidDistributionFactor" minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>This class allows SC to input
different time intervals for distribution factors</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="description">
    <xs:restriction base="xs:string">
        <xs:maxLength value="32"/>
        <xs:minLength value="1"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="BidSetMarketProduct">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>

```

```

<xs:element name="marketProductType"
type="m:marketProductType">
    <xs:annotation>
        <xs:documentation>Market product type includes:  

EN (Energy) RU (Regulation Up) RD (Regulation Dn) SR (Spinning Reserve) NR (Non-  

Spinning Reserve) RC (RUC)</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="selfSchedType" type="m:selfSchedType"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>This attribute is used to specify  

if a bid is a self sched bid. If so what self sched type is it. The possible values are shown  

as follow but not limited to: "NA" - Not Applicable" 'GT' - Generic type 'ETC' - Existing  

transmission contract 'TOR' - Transmission ownership right 'RMR' - Reliability must run  

'RGMR' - Regulatory must run 'ORFC' - Operating reserve flagged for contingency  

'NMSR' - Non must offer supply reduction 'NLRI' - Non participating load  

reduction/increase 'MOSR' - Must offer suply reduction "RMT" - Relaibility must take  

This attribute is originally defined in the BidSelfSched class (proposed by  

SIEMENS)</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="marketProductType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="EN"/>
        <xs:enumeration value="RU"/>
        <xs:enumeration value="RD"/>
        <xs:enumeration value="SR"/>
        <xs:enumeration value="NR"/>
        <xs:enumeration value="RC"/>
        <xs:enumeration value="LFU"/>
        <xs:enumeration value="LFD"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="selfSchedType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="PT"/>
        <xs:enumeration value="ETC"/>
        <xs:enumeration value="TOR"/>
    </xs:restriction>
</xs:simpleType>

```

```

<xs:enumeration value="RMT"/>
<xs:enumeration value="SP"/>
<xs:enumeration value="RA"/>
<xs:enumeration value="IFM"/>
<xs:enumeration value="BAS"/>
<xs:enumeration value="LOF"/>
<xs:enumeration value="WHL"/>
<xs:enumeration value="LPT"/>
</xs:restriction>
</xs:simpleType>
<xs:complexType name="BidSelfSched">
  <xs:sequence>
    <xs:element name="description" type="m:description"
minOccurs="0">
      <xs:annotation>
        <xs:documentation>Description of the object or
instance.</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="mrid" type="m:mrid" minOccurs="0">
      <xs:annotation>
        <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="timeIntervalStart" type="xs:dateTime">
      <xs:annotation>
        <xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="timeIntervalEnd" type="xs:dateTime">
      <xs:annotation>
        <xs:documentation>End of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="selfSchedMw" type="xs:float"
minOccurs="0">
      <xs:annotation>

```

```

<xs:documentation>Self scheduled
value</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="balancingFlag" type="m:YesNo"
minOccurs="0">
<xs:annotation>
<xs:documentation>This is a Y/N flag for a self-
schedule of a resource per market per date and hour, using a specific TR ID. It indicates
whether a self-schedule using a TR is balanced with another self-schedule using the same
TR ID.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="priorityFlag" type="m:YesNo"
minOccurs="0">
<xs:annotation>
<xs:documentation>This is a Y/N flag for a self-
schedule of a resource per market per date and hour, using a specific TR ID. It indicates
whether a self-schedule using a TR has scheduling priority in
IFM/RTM.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="wheelingTransactionReference"
type="xs:string" minOccurs="0">
<xs:annotation>
<xs:documentation>A unique identifier of a
wheeling transaction. A wheeling transaction is a balanced Energy exchange among
Supply and Demand Resources.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="referenceType"
type="m:SelfSchedReferenceType" minOccurs="0">
<xs:annotation>
<xs:documentation>Indication of which class is
referenced by the self schedule.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="pumpSelfSchedMw" type="xs:float"
minOccurs="0">
<xs:annotation>

```

```

<xs:documentation>Contains the PT, ETC, TOR
pumping self schedule quantity. If this value is not null, then the unit is in pumping
mode.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="selfSchedSptResource" type="xs:string"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>PT Export Self Sched Support
Resource</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="ContractRight"
type="m:BidSetContractRight" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Provides definition of
Transmission Ownership Right and Existing Transmission Contract identifiers for use by
SCUC. RMR contract hosting (MasterFile): Startup lead time, Contract Service Limits,
Max Service Hours, Max MWhs, Max Start-ups, Ramp Rate, Max Net Dependable
Capacity, Min Capacity and Unit Substitution for IFM/RTM to
retrieve;</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="AdjacentCASet"
type="m:AdjacentCASetNmReq" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Groups Adjacent Control
Areas</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="HostControlArea"
type="m:HostControlAreaNmReq" minOccurs="0">
    <xs:annotation>
        <xs:documentation>A HostControlArea has a set of
tie points and a set of generator controls (i.e., AGC). It also has a total load, including
transmission and distribution losses.</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="SelfSchedReferenceType">
```

```

<xs:restriction base="xs:string">
    <xs:enumeration value="ETC"/>
    <xs:enumeration value="TOR"/>
    <xs:enumeration value="ECA"/>
    <xs:enumeration value="ACA"/>
    <xs:enumeration value="WHL"/>
    <xs:enumeration value="RMT"/>
</xs:restriction>
</xs:simpleType>
<xs:complexType name="BidSetContractRight">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="mrid" type="m:mrid" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="AdjacentCASetNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="HostControlAreaNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>

```

```

<xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
    </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="UnitScheduleFloatStringOpt">
    <xs:sequence>
        <xs:element name="timeIntervalStart" type="xs:dateTime">
            <xs:annotation>
                <xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="timeIntervalEnd" type="xs:dateTime">
            <xs:annotation>
                <xs:documentation>End of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="parameterID" type="m:parameterID">
            <xs:annotation>
                <xs:documentation>Parameter ID. Valid values
such as PUMPING_LEVEL</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="parameterType" type="m:ParameterType">
            <xs:annotation>
                <xs:documentation>Indication of the type of
parameter being defined (String or Float).</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="parameterValue" type="xs:float">
            minOccurs="0">
                <xs:annotation>
                    <xs:documentation>Parameter value which replaces
corresponding default values from input bid data</xs:documentation>
                </xs:annotation>
            </xs:element>
            <xs:element name="parameterStringValue" type="xs:string">
                minOccurs="0">

```

```

<xs:annotation>
    <xs:documentation>Parameter value which replaces
corresponding default values from input bid data</xs:documentation>
    </xs:annotation>
    </xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="parameterID">
    <xs:restriction base="xs:string">
        <xs:enumeration value="HOURLY_PREDISPATCH"/>
        <xs:enumeration value="PUMPING_LEVEL"/>
        <xs:enumeration value="NERC_TAG"/>
        <xs:enumeration value="SCHEDULING_POINT"/>
        <xs:enumeration value="PUMPING_COST"/>
        <xs:enumeration value="PUMPING_SHUTDOWN_COST"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="ParameterType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="STRING"/>
        <xs:enumeration value="FLOAT"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="BidSchedule">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
            </xs:element>
        <xs:element name="timeIntervalStart" type="xs:dateTime">
            <xs:annotation>
                <xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
            </xs:annotation>
            </xs:element>
        <xs:element name="timeIntervalEnd" type="xs:dateTime">
            <xs:annotation>

```

```

<xs:documentation>End of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="BidPriceCurve" type="m:BidPriceCurve">
<xs:annotation>
<xs:documentation>Relationship between unit
operating price in $/hour (Y-axis) and unit output in MW (X-axis).</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="BidPriceCurve">
<xs:sequence>
<xs:element name="description" type="m:description"
minOccurs="0">
<xs:annotation>
<xs:documentation>Description of the object or
instance.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="mrid" type="m:mrid" minOccurs="0">
<xs:annotation>
<xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="CurveSchedData"
type="m:BidSetCurveSchedData" minOccurs="0" maxOccurs="unbounded">
<xs:annotation>
<xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="BidSetCurveSchedData">
<xs:sequence>
<xs:element name="xAxisData" type="xs:float">
<xs:annotation>
```

```

<xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="y1AxisData" type="xs:float">
<xs:annotation>
<xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="BidDistributionFactor">
<xs:sequence>
<xs:element name="timeIntervalStart" type="xs:dateTime">
<xs:annotation>
<xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="timeIntervalEnd" type="xs:dateTime">
<xs:annotation>
<xs:documentation>End of the time interval n
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="PnodeDistributionFactor"
type="m:PnodeDistributionFactor" minOccurs="0" maxOccurs="unbounded">
<xs:annotation>
<xs:documentation>This class allows SC to input
different distribution factors for pricing node</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="PnodeDistributionFactor">
<xs:sequence>
<xs:element name="factor" type="xs:float">
<xs:annotation>
<xs:documentation>Used to calculate
"participation" of Pnode in an AggregatePnode. For example, for regulation region this

```

factor is 1 and total sum of all factors for a specific regulation region does not have to be 1. For pricing zone the total sum of all factors has to be 1.

```

</xs:annotation>
</xs:element>
<xs:element name="IndividualPnode"
type="m:IndividualPnodeNmReq">
    <xs:annotation>
        <xs:documentation>CleanBid Message: IFM, RUC,
RTP, RTPD.</xs:documentation>
        </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="RampRateCurve">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="rampRateType" type="m:RampRateType">
            <xs:annotation>
                <xs:documentation>How ramp rate is applied (e.g.,
raise or lower, as when applied to a generation resource) Note: CAISO defines the ramp
rate type as an enumeration.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="constraintRampType"
type="m:ConstraintRampType" minOccurs="0">
            <xs:annotation>
                <xs:documentation>The condition that identifies
whether a Generating Resource should be constrained from Ancillary Service provision if
its Schedule or Dispatch change across Trading Hours or Trading Intervals requires more
than a specified fraction of the duration of the Trading Hour or Trading Interval. Valid
values are Fast/Slow</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="CurveSchedData"
type="m:RampRtCurveSchedData" minOccurs="0" maxOccurs="unbounded">

```

```

<xs:annotation>
    <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
    </xs:annotation>
    </xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="RampRateType">
    <xs:annotation>
        <xs:documentation>ramp rate curve type</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
        <xs:enumeration value="OP"/>
        <xs:enumeration value="REG"/>
        <xs:enumeration value="OP_RES"/>
        <xs:enumeration value="LD_DROP"/>
        <xs:enumeration value="LD_PICKUP"/>
        <xs:enumeration value="INTERTIE"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="ConstraintRampType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="FAST"/>
        <xs:enumeration value="SLOW"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="RampRtCurveSchedData">
    <xs:sequence>
        <xs:element name="xAxisData" type="xs:float" minOccurs="0">
            <xs:annotation>
                <xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
            </xs:annotation>
            </xs:element>
        <xs:element name="y1AxisData" type="xs:float">
            <xs:annotation>
                <xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
            </xs:annotation>
            </xs:element>
        </xs:sequence>
    
```

```

</xs:complexType>
<xs:complexType name="StartUpCostCurve">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="CurveSchedData"
type="m:BidSetCurveSchedData" minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>
                <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
            </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="StartUpTimeCurve">
        <xs:sequence>
            <xs:element name="description" type="m:description"
minOccurs="0">
                <xs:annotation>
                    <xs:documentation>Description of the object or
instance.</xs:documentation>
                </xs:annotation>
            </xs:element>
            <xs:element name="CurveSchedData"
type="m:BidSetCurveSchedData" minOccurs="0" maxOccurs="unbounded">
                <xs:annotation>
                    <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
                </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="InterTieBid">
            <xs:sequence>
                <xs:element name="name" type="xs:string" minOccurs="0">
                    <xs:annotation>

```

<xs:documentation>Unique name among objects owned by the same parent.</xs:documentation>

    </xs:annotation>

    </xs:element>

    <xs:element name="mrid" type="xs:string" minOccurs="0">

      <xs:annotation>

        <xs:documentation>MRID stands for master resource identifier which should be globally unique.</xs:documentation>

      </xs:annotation>

    </xs:element>

    <xs:element name="lastModified" type="xs:dateTime" minOccurs="0">

      <xs:annotation>

        <xs:documentation>Time and date the document was last modified. Documents may potentially be modified many times during their lifetime.</xs:documentation>

      </xs:annotation>

    </xs:element>

    <xs:element name="startTime" type="xs:dateTime">

      <xs:annotation>

        <xs:documentation>Start time and date for which bid applies.</xs:documentation>

      </xs:annotation>

    </xs:element>

    <xs:element name="stopTime" type="xs:dateTime">

      <xs:annotation>

        <xs:documentation>Stop time and date for which bid is applicable.</xs:documentation>

      </xs:annotation>

    </xs:element>

    <xs:element name="marketType" type="m:MarketType">

      <xs:annotation>

        <xs:documentation>The market type, DAM or RTM.</xs:documentation>

      </xs:annotation>

    </xs:element>

    <xs:element name="contingencyAvailFlag" type="m:YesNo" minOccurs="0">

      <xs:annotation>

        <xs:documentation>CAISO Extension contingent operating reserve availability (Yes/No). Resource is available to participate with

capacity only in contingency dispatch. CleanBid Message: IFM, RUC, RTD, RTPD

```

</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="bidStatus" type="m:bidStatus"
minOccurs="0"/>
    <xs:element name="createdISO" type="m:YesNo"
minOccurs="0">
        <xs:annotation>
            <xs:documentation>A Yes indicates that this bid
was created by the ISO.</xs:documentation>
        </xs:annotation>
        </xs:element>
        <xs:element name="minHourlyBlock" type="xs:integer"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>The minimum hourly block for
an Inter-Tie Resource supplied within the bid.</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="RegisteredInterTie"
type="m:RegisteredInterTie" minOccurs="0">
                <xs:annotation>
                    <xs:documentation>This class represents the inter
tie resource CleanBid Message: BITS, (IFM, RUC, RTP, RTPD) &amp;
OASIS.</xs:documentation>
                </xs:annotation>
                </xs:element>
                <xs:element name="SchedulingCoordinator"
type="m:SchedulingCoordinatorNmReq">
                    <xs:annotation>
                        <xs:documentation>All CAISO market participants
are represented by Scheduling Coordinators (SCs) that are registered with the CAISO
(section 5.1.2 IFM SRS). One participant can register multiple SCs with the CAISO.
Many participants can do business with the CAISO using a single SC. Each generator
resource can only be scheduled by one SC. One SC can schedule multiple generators. A
load scheduling point can be used by multiple SCs. Each SC can schedule load at
multiple scheduling points. Each SC can have more than one load schedule at any load
scheduling point as long as each load schedule at the same load scheduling point has a
separate resource ID and settlement-quality meter. An inter-tie scheduling point can be
used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling

```

points. An SC can have multiple interchange schedules at the same inter-tie scheduling point by assigning a unique interchange identifier to each interchange schedule. Currently, the type of SC includes: Scheduling Coordinator (MDAS certified) SC of Inter-SC Trades Only (not MDAS certified) SC & FTR holder SC, FTR holder, TO , & UDC.

```

</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="ProductBid" type="m:ProductBid_I"
maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Component of a bid that
pertains to one market product.</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="RampRateCurve" type="m:RampRateCurve"
minOccurs="0" maxOccurs="unbounded">
        <xs:annotation>
            <xs:documentation>Ramp rate as a function of
resource MW output</xs:documentation>
        </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="RegisteredInterTie">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="AggregatedPnode"
type="m:AggregatedPnodeNmReq" minOccurs="0">
                <xs:annotation>
                    <xs:documentation>An aggregated pricing node is a
specialized type of pricing node used to model items such as System Zone, Default Price
Zone, Custom Price Zone, Control Area, Aggregated Generation, Aggregated
Participating Load, Aggregated Non-Participating Load, Trading Hub, DCA
Zone</xs:documentation>
                </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>

```

```

<xs:element name="IndividualPnode"
type="m:IndividualPnodeNmReq" minOccurs="0">
    <xs:annotation>
        <xs:documentation>CleanBid Message: IFM, RUC,
RTP, RTPD.</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="ProductBid_I">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="mrid" type="m:mrid" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="MarketProduct"
type="m:BidSetMarketProduct">
            <xs:annotation>
                <xs:documentation>MarketProduct provides the
details about the market product type and self schedule type</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="BidSelfSched" type="m:BidSelfSched"
minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>
                <xs:documentation>CAISO Extension Defines self
schedule values to be used for specified time intervals</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="UnitSchedule"
type="m:UnitScheduleFloatStringOpt" minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>

```

```

<xs:documentation>CAISO Extension Defines
values that can be changed hourly within a daily bid. Provides indication of parameter
type (string or float) and then a location for the value.</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="BidSchedule" type="m:BidSchedule"
minOccurs="0" maxOccurs="unbounded">
        <xs:annotation>
            <xs:documentation>CAISO Extension Defines bid
schedules to allow a product bid to use specified bid price curves for different time
intervals.</xs:documentation>
                </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="LoadBid">
            <xs:sequence>
                <xs:element name="name" type="xs:string" minOccurs="0">
                    <xs:annotation>
                        <xs:documentation>Unique name among objects
owned by the same parent.</xs:documentation>
                    </xs:annotation>
                    </xs:element>
                <xs:element name="mrid" type="xs:string" minOccurs="0">
                    <xs:annotation>
                        <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
                    </xs:annotation>
                    </xs:element>
                <xs:element name="lastModified" type="xs:dateTime"
minOccurs="0">
                    <xs:annotation>
                        <xs:documentation>Time and date the document
was last modified. Documents may potentially be modified many times during their
lifetime.</xs:documentation>
                    </xs:annotation>
                    </xs:element>
                <xs:element name="startTime" type="xs:dateTime">
                    <xs:annotation>
                        <xs:documentation>Start time and date for which
bid applies.</xs:documentation>

```

```

        </xs:annotation>
    </xs:element>
    <xs:element name="stopTime" type="xs:dateTime">
        <xs:annotation>
            <xs:documentation>Stop time and date for which
bid is applicable.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="marketType" type="m:MarketType">
        <xs:annotation>
            <xs:documentation>The market type, DAM or
RTM.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="contingencyAvailFlag" type="m:YesNo"
minOccurs="0">
        <xs:annotation>
            <xs:documentation>CAISO Extension contingent
operating reserve availability (Yes/No). Resource is available to participate with
capacity only in contingency dispatch. CleanBid Message: IFM, RUC, RTD,
RTPD</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="bidStatus" type="m:bidStatus"
minOccurs="0"/>
        <xs:annotation>
            <xs:documentation>A Yes indicates that this bid
was created by the ISO.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="RegisteredLoad" type="m:RegisteredLoad"
minOccurs="0"/>
        <xs:annotation name="SchedulingCoordinator"
type="m:SchedulingCoordinatorNmReq">
            <xs:annotation>
                <xs:documentation>All CAISO market participants
are represented by Scheduling Coordinators (SCs) that are registered with the CAISO
(section 5.1.2 IFM SRS). One participant can register multiple SCs with the CAISO.
Many participants can do business with the CAISO using a single SC. Each generator

```

resource can only be scheduled by one SC. One SC can schedule multiple generators. A load scheduling point can be used by multiple SCs. Each SC can schedule load at multiple scheduling points. Each SC can have more than one load schedule at any load scheduling point as long as each load schedule at the same load scheduling point has a separate resource ID and settlement-quality meter. An inter-tie scheduling point can be used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling points. An SC can have multiple interchange schedules at the same inter-tie scheduling point by assigning a unique interchange identifier to each interchange schedule. Currently, the type of SC includes: Scheduling Coordinator (MDAS certified) SC of Inter-SC Trades Only (not MDAS certified) SC & FTR holder SC, FTR holder, TO , & UDC.

```

</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="ProductBid" type="m:ProductBid_L"
maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Component of a bid that
pertains to one market product.</xs:documentation>
    </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="RegisteredLoad">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="AggregatedPnode"
type="m:AggregatedPnodeNmReq" minOccurs="0">
                <xs:annotation>
                    <xs:documentation>An aggregated pricing node is a
specialized type of pricing node used to model items such as System Zone, Default Price
Zone, Custom Price Zone, Control Area, Aggregated Generation, Aggregated
Participating Load, Aggregated Non-Participating Load, Trading Hub, DCA
Zone</xs:documentation>
                </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>

```

```

<xs:element name="IndividualPnode"
type="m:IndividualPnodeNmReq" minOccurs="0">
    <xs:annotation>
        <xs:documentation>CleanBid Message: IFM, RUC,
RTP, RTPD.</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="ProductBid_L">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="mrid" type="m:mrid" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="MarketProduct"
type="m:BidSetMarketProduct">
            <xs:annotation>
                <xs:documentation>MarketProduct provides the
details about the market product type and self schedule type</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="BidSelfSched" type="m:BidSelfSched"
minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>
                <xs:documentation>CAISO Extension Defines self
schedule values to be used for specified time intervals</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="UnitSchedule"
type="m:UnitScheduleFloatStringOpt" minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>

```

```

<xs:documentation>CAISO Extension Defines
values that can be changed hourly within a daily bid. Provides indication of parameter
type (string or float) and then a location for the value.</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="BidSchedule" type="m:BidSchedule"
minOccurs="0" maxOccurs="unbounded">
        <xs:annotation>
            <xs:documentation>CAISO Extension Defines bid
schedules to allow a product bid to use specified bid price curves for different time
intervals.</xs:documentation>
                </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="MarketRunMsg">
            <xs:sequence>
                <xs:element name="marketRunID" type="xs:string">
                    <xs:annotation>
                        <xs:documentation>A unique identifier that
differentiates the different runs of the same Market ID. More specifically, if the market
is re-opened and re-closed and rerun completely, the first set of results and the second set
of results produced will have the same Market ID but will have different Market Run IDs
since the multiple run is for the same market.</xs:documentation>
                </xs:annotation>
                </xs:element>
            </xs:sequence>
            <xs:element name="marketEndTime" type="xs:dateTime"
minOccurs="0"/>
                <xs:annotation>
                    <xs:documentation>An identification that defines
the attributes of the Market. In todays terms: Market Type: DA, RTM, Trade Date:
1/25/04, Trade Hour: 1-25</xs:documentation>
                </xs:annotation>
                </xs:element>
            <xs:element name="marketType" type="m:MarketType"
minOccurs="0">
                <xs:annotation>
                    <xs:documentation>The market type, DAM or
RTM.</xs:documentation>
                </xs:annotation>

```

```

</xs:element>
<xs:element name="executionType" type="m:ExecutionType"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>The execution type
"DA", "HASP", "RTPD", "RTD"</xs:documentation>
    <xs:annotation>
        </xs:element>
        <xs:element name="masterFileRepositoryVersion"
type="xs:string" minOccurs="0">
            <xs:annotation>
                <xs:documentation>Unique reference to the
Masterfile that identifies a complete set of reference data that was used as input to the
market.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:simpleType name="ExecutionType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="DA"/>
        <xs:enumeration value="HASP"/>
        <xs:enumeration value="RTPD"/>
        <xs:enumeration value="RTD"/>
    </xs:restriction>
</xs:simpleType>
</xs:schema>

```

////// end //////////////

#### 4.7.3 Example XML File (CleanBidSet.xml)

```

<?xml version="1.0" encoding="UTF-8"?>
<m:CleanBidSet xsi:schemaLocation="http://www.caiso.com/soa/2008-08-
11/CleanBidSet.xsd http://www.caiso.com/1f5e/1f5ef4ce72f40.xsd"
xmlns:m="http://www.caiso.com/soa/2008-08-11/CleanBidSet.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
    <m:MessageHeader>
        <m:TimeDate>2007-02-14T00:00:00.0Z</m:TimeDate>
        <m:Source>Sample Payload</m:Source>
    </m:MessageHeader>

```



```
<m:MessagePayload>
<m:InterTieBid>
<m:name>RSC-03</m:name>
<m:mrid>RSC-03</m:mrid>
<m:startTime>2007-02-15T00:00:00.0-08:00</m:startTime>
<m:stopTime>2007-02-16T00:00:00.0-08:00</m:stopTime>
<m:marketType>DAM</m:marketType>
<m:bidStatus>CL</m:bidStatus>
<m:RegisteredInterTie>
<m:mrid>RSC-03</m:mrid>
</m:RegisteredInterTie>
<m:SchedulingCoordinator>
<m:mrid>SC-01</m:mrid>
</m:SchedulingCoordinator>
<m:ProductBid>
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<m:description>Energy</m:description>
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</m:MarketProduct>
<m:UnitSchedule>
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<m:timeIntervalEnd>2007-02-16T08:00:00.0-08:00</m:timeIntervalEnd>
<m:parameterID>HOURLY_PREDISPATCH</m:parameterID>
<m:parameterType>STRING</m:parameterType>
<m:parameterValue>0</m:parameterValue>
<m:parameterStringValue>NO</m:parameterStringValue>
</m:UnitSchedule>
<m:BidSchedule>
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</m:BidSchedule>
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<m:ProductBid>
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<m:BidSchedule>
```



```
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</m:CurveSchedData>
</m:BidPriceCurve>
</m:BidSchedule>
</m:ProductBid>
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<m:y1AxisData>50</m:y1AxisData>
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</m:RampRateCurve>
<m:RampRateCurve>
<m:description>Operational Reserve Ramp Rate</m:description>
<m:rampRateType>OP_RES</m:rampRateType>
<m:CurveSchedData>
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</m:CurveSchedData>
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<m:startTime>2007-02-15T00:00:00.0-08:00</m:startTime>
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<m:contingencyAvailFlag>YES</m:contingencyAvailFlag>
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<m:noLoadCost>3393</m:noLoadCost>
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</m:MarketProduct>
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```



```
<m:y1AxisData>122.73</m:y1AxisData>
</m:CurveSchedData>
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</m:BidSchedule>
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<m:ProductBid>
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<m:marketProductType>RU</m:marketProductType>
<m:selfSchedType>SP</m:selfSchedType>
</m:MarketProduct>
<m:BidSelfSched>
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<m:selfSchedMw>2</m:selfSchedMw>
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<m:description>Regulation Down</m:description>
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</m:MarketProduct>
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```



```
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</m:BidSchedule>
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<m:marketProductType>SR</m:marketProductType>
</m:MarketProduct>
<m:BidSchedule>
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<m:timeIntervalEnd>2007-02-16T00:00:00.0-08:00</m:timeIntervalEnd>
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</m:CurveSchedData>
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</m:BidSchedule>
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</m:MarketProduct>
<m:BidSchedule>
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</m:CurveSchedData>
</m:BidPriceCurve>
</m:BidSchedule>
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</m:MarketProduct>
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```



```
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</m:CurveSchedData>
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</m:CurveSchedData>
</m:RampRateCurve>
<m:RampRateCurve>
<m:description>Operational Reserve Ramp Rate</m:description>
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</m:CurveSchedData>
</m:StartUpCostCurve>
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</m:CurveSchedData>
</m:StartUpTimeCurve>
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<m:marketEndTime>2007-02-16T00:00:00.0Z</m:marketEndTime>
<m:marketID>MRKTID-01</m:marketID>
<m:marketType>DAM</m:marketType>
<m:executionType>DA</m:executionType>
</m:MarketRun>
</m:MessagePayload>
</m:CleanBidSet>
```

## 4.8 Fault Return

The fault return message is the same for all services; see Section 2.9 for details.

## 5 Retrieve Current Bid Results

---

### 5.1 Business Scenario

The following bid results need to be exchanged between Scheduling Coordinators and the SIBR system.

1. This service will be used to retrieve result for bids submitted/generated through the following:
  - a. Bids submitted through SIBR GUI
  - b. Bids submitted through SIBR UI Manual Upload
  - c. Bids submitted through API
2. The service will be used to retrieve results for bids submitted either in the DA or RT markets,
3. The service will be used to retrieve bid results for market trading periods that are open.
4. The bid result will include the following major data elements:
  - a. Bid Status
  - b. Bid Data
  - c. Bid Error Messages
5. The bid status can be any of the following, depending on the filtering criteria used:
  - a. I - Invalid
  - b. RJ - Rejected
  - c. CM - Conditionally Modified
  - d. M - Modified
  - e. CV - Conditionally Valid
  - f. V - Valid
  - g. CX - Cancelled
  - h. O - Obsolete
  - i. S - Submit in Queue
6. The result will include the same bid data that can be retrieved and displayed in SIBR GUI. The text "NOT API submitted" will be inserted in the bid name if the bid were submitted through SIBR GUI.
7. The service will return bid results for all resources that belong to the user, depending on the filtering criteria used.

8. The bid result will be filtered using any of the following criteria:

a. By Bid MRID

- i. Using Bid MRID filtering criteria, the user will be able to retrieve the result of a bid submitted for a specific resource associated with the Bid MRID.
- ii. The following filtering option must be included:
  1. Bid MRID only
- iii. The result will include bids submitted either through SIBR UI manual upload or through API.
- iv. The result will not include bids submitted through SIBR GUI since no bid reference ID is associated with the bid
- v. The result will include the most recent bid result associated with the bid MRID.
- vi. The result will include single bid and the bid status can be any of the following:
  1. Invalid (I)
  2. Rejected (RJ)
  3. Conditionally Modified (CM)
  4. Modified (M)
  5. Conditionally Valid (CV)
  6. Valid (V)
  7. Cancelled (CX)
  8. Obsolete (O)
  9. Submit in Queue (S)
- vii. The result will include error messages associated with the bid MRID.
- viii. The result will not include bids with Cancelled (CX), Hidden Rejected (HR), Hidden Invalid (HI), Obsolete (O) or Service Obsolete (SO) status since these bids are non-displayable in SIBR GUI.

b. By Resource ID

- i. Using Resource ID filtering criteria, the user will be able to retrieve only the most recent result of the bid submitted, for the specified resource ID which belongs to the user and for trading period that corresponds to the specified start and end date/time interval. The bids returned would include only bids that can be displayed in SIBR GUI.
- ii. The following filtering options must be included:
  1. Start and End Date/Time – Start and End / Time must correspond to beginning or ending of trading period; maximum of 1 trading period per request.

2. Market Type – either DAM or RTM
  3. Resource ID – resource name known to Market Participants, and no wildcards allowed
- iii. The service will return result of the DA bids submitted through SIBR GUI manual upload, through API, or through SIBR GUI
  - iv. The service will return bids submitted for the specified Market Type.
  - v. The result will include bid for a specified resource that belongs to the user.
  - vi. The result will include bid for specified trading period.
  - vii. The result will include error messages generated for each bid returned by the service.
  - viii. The result will include at most 2 bid results and each resource can have up to one Market Accepted and up to Non-Market Accepted, and the bid status can have any of the following:
    1. Market Accepted (M, V, CM, CV,)
    2. Non-Market Accepted (CX, I, RJ, HI, HR, SO)
  - ix. The result will not include bids with Cancelled (CX), Hidden Rejected (HR), Hidden Invalid (HI), Obsolete (O) or Service Obsolete (SO) status since these bids are non-displayable in SIBR GUI.

c. By Date

- i. Using By Date filtering criteria, the user will be able to retrieve only the most recent result of the bid submitted, for all the resources which belongs to the user and for trading period that corresponds to the specified start and end date/time interval. The bids returned would include only bids that can be displayed in SIBR GUI.
- ii. The following filtering options must be included:
  1. Start and End Date/Time – Start and End / Time must correspond to beginning or ending of trading period; maximum of 1 trading period per request.
  2. Market Type – either DAM or RTM
- iii. The service will return result of the DA bids submitted through SIBR GUI manual upload, through API, or through SIBR GUI
- iv. The service will return bids submitted for the specified Market Type.
- v. The result will include bid for all resources that belongs to the user.
- vi. The result will include bid for specified trading period.
- vii. The result will include error messages generated for each bid returned by the service.

- viii. The result will include at most 2 bid results and each resource can have up to one Market Accepted and up to one Non-Market Accepted, and the bid status can have any of the following:
  - 1. Market Accepted (M, V, CM, CV,)
  - 2. Non-Market Accepted (I, CX, RJ, HI, HR, SO)
- ix. The result will not include bids with Cancelled (CX), Hidden Rejected (HR), Hidden Invalid (HI) Obsolete (O) or Service Obsolete (SO) status since these bids are non-displayable in SIBR GUI.

d. By SC ID

- i. Using By SC ID filtering criteria, the user will be able to retrieve clean bid for all the resource that belongs to the SC ID and trading period specified that are authorized for the certificate being used.
- ii. The result will include at least a bid for the specified trading period, and for all resource that belong to the SC ID for the user.

The result will not include bids with Cancelled (CX), Hidden Rejected (HR), Hidden Invalid (HI) Obsolete (O) or Service Obsolete (SO) status since these bids are non-displayable in SIBR GUI

#### ***Day Ahead Bid Validation Results***

After a bid is submitted, Content Validation will be performed to ensure that the bid adheres to the structural rules requirements . If not, the bid will be given a rejected status.

After Content Validation succeeds, Bid Validation verifies that the various components of the bid adhere to the applicable market rules. If this validation passes, the bid becomes eligible to be used in a market. If not, the bid will be given an Invalid status.

#### ***Day Ahead Bid Processing Results***

If the bid passes Content and Bid validation rules with no modifications, it will be given a Conditionally Valid status.

If the bid is acceptable only after the system has automatically modified it, it is called a Conditionally Modified. At this point, the Scheduling Coordinator has the option to view the bid and

- Cancel the bid, in which case the bid is retained in the system database as a Cancelled Bid
- Modify and re-submit the bid, in which case the original bid is retained in the system database as an Obsolete Bid

#### ***Bid Validation Results (After Master File Updates)***

After the Master File has been updated, all "conditional" bids are re-validated via a process very similar to what happened in the Day Ahead Bid Validation. This validation process may result in changes to the current bid statuses.

### **Bid Processing Results (After Master File Updates)**

After the Master File is updated, the Bid Processing steps are repeated. This may result in changes to the current bid statuses,

To summarize, the following bid status results may be assigned to a bid. These are available to the Scheduling Coordinator through the retrieveCurrentBidResults web service:

- Rejected Bid
- Invalid Bid
- Conditionally Valid Bid
- Conditionally Modified Bid
- Valid Bid
- Modified Bid
- Canceled Bid
- Obsolete Bid

Along with the bid results, the bid status and the necessary error information will be provided to the Scheduling Coordinators.

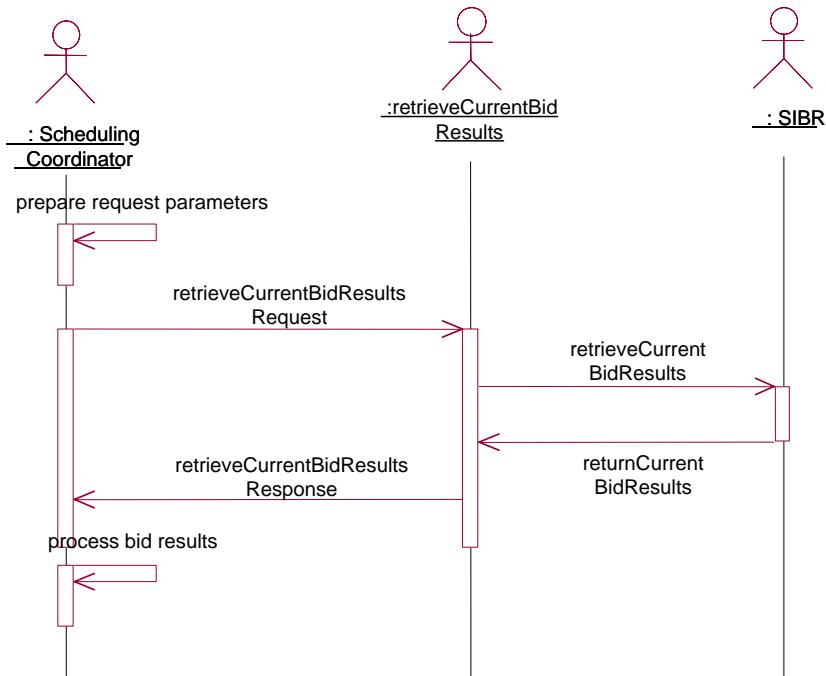
## **5.2 Service Level Agreement**

The following service level agreement defines the business and technical requirements for service availability and performance.

|  |   |
|--|---|
| <b>Service availability requirements</b>                                       | Service level goal is 99.9%.  |
| <b>Expected size of payload (average and maximum)</b>                          | (AVG # of bids) to (500+ maximum bids) times size of one bid  |
| <b>Expected frequency (average and maximum)</b>                                | At least once an hour per Schedule Coordinator utilizing the service for RTM, and several times prior to DAM closing 10:00 AM per SC. |
| <b>Longest time the service can be unavailable before business is impacted</b> | [to be determined]  |
| <b>Business impact if is unavailable</b>                                       | Schedule Coordinators utilizing the service may not complete submitting all their bids.   |
| <b>Expected response time for the service</b>                                  | [to be determined]  |
| <b>Expected time to exchange</b>   | [to be determined]  |

## **5.3 Use Model**

The sequence diagram below describes the service interactions between SCs and CAISO for retrieving the current bid results. The Web service involved is retrieveCurrentBidResults.



## 5.4 Operation Details

The service has one operation with three message types. All input and output messages are in XML format.

| Operation                  | Message Types | Message                    | WSDL                            | XSD                    |
|----------------------------|---------------|----------------------------|---------------------------------|------------------------|
| RetrieveCurrent BidResults | Input         | retrieveCurrentBid Results | RetrieveCurrentBid Results.wsdl | RequestBidResults .xsd |
|                            | Output        | retrieveCurrentBid Results |                                 | BidResults.xsd         |
|                            | Fault         | faultReturnType            |                                 | StandardOutput. xsd    |

## 5.5 WSDL (*retrieveCurrentBidResults.wsdl*)

///////// start //////////

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions
    xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
    xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns="http://schemas.xmlsoap.org/wsdl/"
    xmlns:wsdl="http://ws-i.org/schemas/conformanceClaim/"

    xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
    xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
    xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"

    targetNamespace="http://www.caiso.com/soa/2008-08-
11/retrieveCurrentBidResults.wsdl"
    xmlns:tns="http://www.caiso.com/soa/2008-08-11/retrieveCurrentBidResults.wsdl"
    xmlns:schemaInfor="http://www.caiso.com/soa/2008-08-11/BidResult.xsd"

    xmlns:typeIn="http://www.caiso.com/soa/2008-05-21/RequestBidResults.xsd"
    xmlns:typeHeader="http://www.caiso.com/soa/2006-06-
13/StandardAttachmentInfor.xsd"
    xmlns:typeFault="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">

    <wsdl:documentation>
        A web service for interested systems to retrieve the current bid results from SIBR
    </wsdl:documentation>

    <!-- type elements define data types used in this wsdl document using xml schema -->
    <!-- note the namespaces defined matched up with the typeIn and typeOut defined
above -->
    <wsdl:types>
        <xsschema>
            <xs:import namespace="http://www.caiso.com/soa/2008-05-
21/RequestBidResults.xsd" schemaLocation="RequestBidResults.xsd" />
        </xsschema>
        <xsschema>
```

```
<xs:import namespace="http://www.caiso.com/soa/2006-06-  
13/StandardAttachmentInfor.xsd" schemaLocation="StandardAttachmentInfor.xsd" />  
</xs:schema>  
<xs:schema>  
  <xs:import namespace="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd"  
schemaLocation="StandardOutput.xsd" />  
</xs:schema>  
</wsdl:types>  
  
<!-- message elements define input and output parameters -->  
<!-- a request and response case to use the data type defined in TYPE for payload -->  
<wsdl:message name="retrieveCurrentBidResultsRequest">  
  <wsdl:part name="requestData" type="typeIn:RequestBidResults">  
    <wsdl:documentation>send request date</wsdl:documentation>  
  </wsdl:part>  
</wsdl:message>  
<wsdl:message name="retrieveCurrentBidResultsHeader">  
  <!-- attachment wrapper -->  
  <wsdl:part name="standardAttachmentInfor"  
element="typeHeader:standardAttachmentInfor">  
    <wsdl:documentation>attachment information</wsdl:documentation>  
  </wsdl:part>  
</wsdl:message>  
<wsdl:message name="retrieveCurrentBidResultsResponse">  
  <wsdl:part name="BidResult_attachment" type="xs:base64Binary">  
    <wsdl:documentation>return bids result</wsdl:documentation>  
  </wsdl:part>  
</wsdl:message>  
<wsdl:message name="faultReturnType">  
  <wsdl:part name="faultReturn" element="typeFault:outputDataType">  
    <wsdl:documentation>fault information</wsdl:documentation>  
  </wsdl:part>  
</wsdl:message>  
  
<!-- portType elements define the abstract interface of a web service -->  
<!-- to use the message type defined in message above -->  
<wsdl:portType name="retrieveCurrentBidResults">  
  <wsdl:operation name="retrieveCurrentBidResults">  
    <wsdl:documentation>get bid results</wsdl:documentation>  
    <wsdl:input message="tns:retrieveCurrentBidResultsRequest" />  
    <wsdl:output message="tns:retrieveCurrentBidResultsResponse" />
```

```
<wsdl:fault name="faultReturn" message="tns:faultReturnType" />
</wsdl:operation>
</wsdl:portType>

<!-- binding elements define protocols and encoding styles -->
<!-- to bind the operation defined in portType -->
<wsdl:binding name="retrieveCurrentBidResults_Binding"
type="tns:retrieveCurrentBidResults">
  <soap:binding style="rpc"
    transport="http://schemas.xmlsoap.org/soap/http"/>
  <wsdl:operation name="retrieveCurrentBidResults">
    <soap:operation style="rpc"
      soapAction="http://www.caiso.com/soa/2008-05-21/retrieveCurrentBidResults"/>
    <wsdl:input>
      <soap:body use="literal" namespace="http://www.caiso.com/soa/2008-05-
21/retrieveCurrentBidResults"/>
    </wsdl:input>
    <wsdl:output>
      <mime:multipartRelated>
        <mime:part>
          <soap:body use="literal" namespace="http://www.caiso.com/soa/2008-05-
21/retrieveCurrentBidResults"/>
        </mime:part>
        <mime:part>
          <mime:content part="BidResult_attachment"
            type="application/octetstream"/>
        </mime:part>
      </mime:multipartRelated>
      <soap:header message="tns:retrieveCurrentBidResultsHeader"
        part="standardAttachmentInfor" use="literal"
        wsdl:required="true"/>
    </wsdl:output>
    <wsdl:fault name="faultReturn">
      <soap:fault name="faultReturn" use="literal"/>
    </wsdl:fault>
  </wsdl:operation>
</wsdl:binding>

<wsdl:service name="retrieveCurrentBidResultsService">
  <wsdl:port name="retrieveCurrentBidResultsServicePort"
  binding="tns:retrieveCurrentBidResults_Binding">
```

```

<soap:address location="http://www.caiso.com/soa/2008-05-
21/retrieveCurrentBidResults"/>
</wsdl:port>
</wsdl:service>

</wsdl:definitions>

```

////////// end /////////////

## 5.6 Current Bid Results Request

### 5.6.1 Element Table

| Element  | Data Description                           | Type     | Req'd |
|--|--|----------|-------|
| <b>Bid_MarketTimeInterval</b>                                      | <b>Request using Market Type</b>           |          | No    |
| Bid_MarketTimeInterval. MarketStartTime                            | Time of day when Market Definition starts. | dateTime | Yes   |
| Bid_MarketTimeInterval. MarketEndTime                              | Time of day when Market Definition ends.   | dateTime | Yes   |
| Bid_MarketTimeInterval. marketType                                 | Market Type to be used:<br>DAM<br>RTM      | string   | Yes   |
| <b>Bid_SchedulingCoordinatorMarketTimeInterval</b>                 | <b>Request using SC ID</b>                 |          | No    |
| Bid_SchedulingCoordinatorMarketTimeInterval. MarketStartTime       | Time of day when Market Definition starts. | dateTime | Yes   |
| Bid_SchedulingCoordinatorMarketTimeInterval. MarketEndTime         | Time of day when Market Definition ends.   | dateTime | Yes   |
| Bid_SchedulingCoordinatorMarketTimeInterval. marketType            | Market Type to be used:<br>DAM<br>RTM      | string   | Yes   |
| Bid_SchedulingCoordinatorMarketTimeInterval. schedulingCoordinator | SC ID to be used with Market Type          | string   | Yes   |
| <b>Bid_BidIDMarketTimeInterval</b>                                 | <b>Request using Bid ID(MRID)</b>          |          | No    |

| Element  | Data Description   | Type     | Req'd     |
|--|--|----------|-----------|
| Bid_BidIDMarketTimeInterval.<br>BidID                | BidID = MRID which stands for master object identifier which should be globally unique.      | string   | Yes       |
| <b>Bid_ResourceIDMarketTimeInterval</b>              | <b>Request using Resource ID</b>   |          | <b>No</b> |
| Bid_ResourceIDMarketTimeInterval.<br>MarketStartTime | Time of day when Market Definition starts.   | dateTime | Yes       |
| Bid_ResourceIDMarketTimeInterval.<br>MarketEndTime   | Time of day when Market Definition ends.   | dateTime | Yes       |
| Bid_MarketTimeInterval.<br>marketType                | Market Type to be used:<br>DAM<br>RTM  | string   | Yes       |
| Bid_ResourceIDMarketTimeInterval.<br>ResourceID      | ResourceID = MRID which stands for master object identifier which should be globally unique. | string   | Yes       |

### 5.6.2 Schema (RequestBidResults.xsd)

```
////////// start //////////

<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2007 sp2 (http://www.altova.com) by Dagmar Haller
(California ISO) -->
<xsschema xmlns="http://www.caiso.com/soa/2008-05-21/RequestBidResults.xsd"
xmlns:xss="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://www.caiso.com/soa/2008-05-21/RequestBidResults.xsd"
elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xselement name="RequestBidResults" type="RequestBidResults"/>
  <xsccomplexType name="RequestBidResults">
    <xscchoice>
      <xselement name="Bid_MarketTimeInterval"
type="Bid_MarketTimeInterval" minOccurs="0"/>
      <xselement
name="Bid_SchedulingCoordinatorMarketTimeInterval"
type="Bid_SchedulingCoordinatorMarketTimeInterval" minOccurs="0"/>
        <xselement name="Bid_BidIDMarketTimeInterval"
type="Bid_BidIDMarketTimeInterval" minOccurs="0"/>
        <xselement name="Bid_ResourceIDMarketTimeInterval"
type="Bid_ResourceIDMarketTimeInterval" minOccurs="0"/>
    </xscchoice>
  </xsccomplexType>
</xsschema>
```

```

</xs:complexType>
<xs:simpleType name="MarketType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="DAM"/>
        <xs:enumeration value="RTM"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="Bid_MarketTimeInterval">
    <xs:sequence>
        <xs:element name="MarketStartTime" type="xs:dateTime"/>
        <xs:element name="MarketEndTime" type="xs:dateTime"/>
        <xs:element name="marketType" type="MarketType"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="Bid_SchedulingCoordinatorMarketTimeInterval">
    <xs:sequence>
        <xs:element name="MarketStartTime" type="xs:dateTime"/>
        <xs:element name="MarketEndTime" type="xs:dateTime"/>
        <xs:element name="marketType" type="MarketType"/>
        <xs:element name="schedulingCoordinator" type="xs:string"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="Bid_BidIDMarketTimeInterval">
    <xs:sequence>
        <xs:element name="BidID" type="xs:string"
maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="Bid_ResourceIDMarketTimeInterval">
    <xs:sequence>
        <xs:element name="MarketStartTime" type="xs:dateTime"/>
        <xs:element name="MarketEndTime" type="xs:dateTime"/>
        <xs:element name="marketType" type="MarketType"/>
        <xs:element name="ResourceID" type="xs:string"
maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
</xs:schema>

```

////////// end /////////////

## 5.7 Current Bid Results Response

### 5.7.1 Element Table

| Element                    | Data Description  | Type     | Req'd |
|----------------------------|---|----------|-------|
| <b>Message Header</b>      |   |          |       |
| TimeDate                   | The date/Time, in GMT, when the payload is published.   | dateTime | Yes   |
| Source                     | The source of published data.   | string   | Yes   |
| <b>Message Payload</b>     |   |          |       |
| <b>InterTieBid</b>         |   |          |       |
| description                | Description of intertie bid. (1-32 characters)  | string   | No    |
| name                       | Unique name for intertie bid. (1-32 characters)   | string   | No    |
| mrid                       | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| startTime                  | Start time and date for which bid applies.  | dateTime | Yes   |
| stopTime                   | Stop time and date for which bid is applies.  | dateTime | Yes   |
| marketType                 | The market type, DAM or RTM.  | string   | Yes   |
| bidStatus                  | Bid status:<br><br>RJ - Rejected Bid<br>I - Invalid Bid<br>CV - Conditionally valid bid<br>CM - Conditionally modified bid<br>V - Valid bid<br>M - Modified bid<br>CX - Canceled bid<br>O - Obsolete bid<br>S - Submit in Queue | string   | No    |
| CreatedISO                 | Implies if the bid was created by the ISO versus submitted by an SC   | string   | no    |
| MinHourlyBlock             | The Registered upper bound of MHB for an Inter-Tie Resource   | integer  | No    |
| RegisteredInterTie.mrid    | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | Yes   |
| SchedulingCoordinator.mrid | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | Yes   |

| Element                                      | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.description                       | Description of Product Bid. (1-32 characters)   | string   | No    |
| ProductBid.mrid                              | MRID stands for master resource identifier which should be globally unique.   | mrid     | No    |
| ProductBid.MarketProduct.description         | Description of Market Product. (1-32 characters)  | string   | No    |
| ProductBid.MarketProduct.marketProductType   | Market product type. Valid values are:<br>EN – Energy type<br>RU – Regulation up<br>RD – Regulation down<br>SR – spinning reserve<br>NR – Non-spinning reserve<br>RC – Residual Unit Commitment<br>LFU – Load Following Up<br>LFD – Load Following down   | string   | Yes   |
| ProductBid.MarketProduct.selfSchedType       | Self schedule bid contract type. Valid values are:<br>PT – Price Taker<br>LPT – Lower Price Taker<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right<br>RMT – Regulatory Must Take<br><br>RA – Resource Adequacy<br>SP – Self Provision<br><br>BAS – Base Load<br>LOF – Load Following<br>WHL - Wheeling | string   | No    |
| ProductBid.BidSelfSched.description          | Description of Bid Self Schedule. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.timeIntervalStart    | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.timeIntervalEnd      | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.selfSchedMw          | Self Schedule MW value for the referenced commodity.  | float    | No    |
| ProductBid.BidSelfSched.selfSchedSptResource | PT Export Self Sched Support Resource   | String   | No    |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.BidSelfSched.balancingFlag                | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR is balanced with another self-schedule using the same TR ID.               | YesNo    | No    |
| ProductBid.BidSelfSched.priorityFlag                 | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM.  | YesNo    | No    |
| ProductBid.BidSelfSched.wheelingTransactionReference | A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources   | String   | No    |
| ProductBid.BidSelfSched.referenceType                | Indication of which class is referenced by the self schedule; resulting in the following choices: <ul style="list-style-type: none"><li>• ETC</li><li>• TOR</li><li>• WHL</li><li>• RMT</li></ul> *Functionality not fully supported. | String   | No    |
| ProductBid.BidSelfSched.pumpSelfSchedMw              | Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null, then the unit is in pumping mode.  | float    | No    |
| ProductBid.BidSelfSched.AdjacentCASet/mrid           | Goups Adjacent Control Areas.   | String   | No    |
| ProductBid.BidSelfSched.HostControlArea/mrid         | A HostControlArea has a set of tie points and a set of generator controls (i.e., AGC). It also has a total load, including transmission and distribution losses.  | String   | No    |
| ProductBid.BidSelfSched.ContractRight.description    | Description of Contract Right. (1-32 characters)  | string   | No    |
| ProductBid.BidSelfSched.ContractRight.mrid           | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | Yes   |
| ProductBid.UnitSchedule.timeIntervalStart            | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| contingencyAvailFlag                                 | Contingent operating reserve availability. Valid value = YES or NO. Resource is available to participate with capacity only in contingency dispatch.  | string   | No    |
| ProductBid.UnitSchedule.timeIntervalEnd              | End of the time interval in which bid is valid.   | dateTime | Yes   |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.UnitSchedule.parameterID                            | Parameter ID. Valid values are:<br>HOURLY_PREDISPATCH – hourly pre-dispatch<br>PUMPING_LEVEL – pumping level<br>PUMPING_COST<br>PUMPING_SHUTDOWN_COST   | string   | Yes   |
| ProductBid.UnitSchedule.parameterType                          | Indication of the type of parameter being defined (STRING or FLOAT).  | string   | Yes   |
| ProductBid.UnitSchedule.parameterValue                         | Parameter value which replaces corresponding default values from input bid data.  | float    | No    |
| ProductBid.UnitSchedule.parameterStringValue                   | If ProductBid.UnitSchedule = STRING then value = YES. Else value = NO.  | string   | No    |
| ProductBid.BidSchedule.description                             | Description of Bid Schedule. (1-32 characters)  | string   | No    |
| ProductBid.BidSchedule.timeIntervalStart                       | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSchedule.timeIntervalEnd                         | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.description               | Description of Bid Price Curve. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.mrid                      | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.xAxisData  | The data value of the X-axis variable.  | float    | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.y1AxisData | The data value of the Y-axis variable, depending on the Y-axis units.<br>Pattern value = [-+]?[\\d]+.?[\\d]?\\d?  | float    | No    |
| ProductBid.BidDistributionFactor.description                   | Description of Bid Distribution Factor. (1-32 characters)   | string   | No    |
| RampRateCurve.description                                      | Description of Ramp Rate Curve. (1-32 characters)   | string   | No    |
| RampRateCurve.rampRateType                                     | [Not supported in MRTU Release 1.]  | string   | No    |
| RampRateCurve.constraintRampType                               | The condition that identifies whether a Generating Resource should be constrained from Ancillary Service provision if its Schedule or Dispatch change across Trading Hours or Trading Intervals requires more than a specified fraction of the duration of the Trading Hour or Trading Interval. Valid values are Fast/Slow | string   | No    |

| Element   | Data Description   | Type     | Req'd |
|---|--|----------|-------|
| RampRateCurve.CurveSched<br>Data.xAxisData      | The data value of the X-axis variable..  | float    | No    |
| RampRateCurve.CurveSched<br>Data.y1AxisData     | The data value of the Y-axis variable, depending on the Y-axis units.<br><br>Pattern value = [\d]+\.\?\d?\d?   | float    | No    |
| RampRateCurve.CurveSched<br>Data.prohibitedZone | [Does not apply to intertie resource bids.]  | string   | No    |
| BidError.mrid                                   | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string   | No    |
| BidError.errPriority                            | Message level:<br>0 = highest priority<br>1-4 = different level of error<br>5 = warning message<br>6 = Information status  | integer  | Yes   |
| BidError,errMessage                             | Text of an error or warning message.   | string   | Yes   |
| BidError.ruleID                                 | SIBR Market Rule Identifier.   | integer  | Yes   |
| BidError.startTime                              | Start date/time of the Bid component, for which this error or warning is logged.   | dateTime | Yes   |
| BidError.endTime                                | End date/time of the Bid component, for which this error or warning is logged.   | dateTime | Yes   |
| BidError.logTimeStamp                           | Timestamp of logged message.   | dateTime | Yes   |
| BidError.MarketProduct.<br>description          | Description of Market Product. (1-32 characters)   | string   | No    |
| BidError.MarketProduct.<br>marketProductType    | Market product type. Valid values are:<br><br>EN – Energy type<br>RU – Regulation up<br>RD – Regulation down<br>SR – spinning reserve<br>NR – Non-spinning reserve<br>RC – Residual Unit Commitment  | string   | Yes   |
| BidError.MarketProduct.<br>selfSchedType        | Self schedule bid contract type. Valid values are:<br><br>PT – Price Taker<br>LPT – Lower Price Taker<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right<br>RMT – Regulatory Must Take<br>RA – Resource Adequacy<br>SP – Self Provision | string   | No    |

| Element              | Data Description  | Type     | Req'd |
|----------------------|---|----------|-------|
| <b>GeneratingBid</b> |   |          |       |
| description          | Description of Generating Bid. (1-32 characters)  | string   | No    |
| name                 | Unique name for Generating Bid. (1-32 characters)   | string   | No    |
| mrid                 | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| lastModified         | Time and date the document was last modified.   | dateTime | No    |
| startTime            | Start time and date for which bid applies.  | dateTime | Yes   |
| stopTime             | Stop time and date for which bid is applies.  | dateTime | Yes   |
| marketType           | The market type, DAM or RTM.  | string   | Yes   |
| energyMaxDay         | Maximum amount of energy per day which can be produced during the trading period in MWh.  | float    | No    |
| energyMinDay         | Minimum amount of energy per day which has to be produced during the trading period in MWh.   | float    | No    |
| contingencyAvailFlag | Contingent operating reserve availability. Valid value = YES or NO. Resource is available to participate with capacity only in contingency dispatch.  | YesNo    | No    |
| bidStatus            | Bid status:<br>RJ - Rejected Bid<br>I - Invalid Bid<br>CV - Conditionally valid bid<br>CM - Conditionally modified bid<br>V - Valid bid<br>M - Modified bid<br>CX - Canceled bid<br>O - Obsolete bid<br>S - Submit in Queue | string   | No    |
| CreatedISO           | Implies if the bid was created by the ISO versus submitted by an SC   | string   | no    |
| noLoadCost           | Resource fixed no load cost.<br>Pattern value = [\d]+\.\?\d?\d?   | float    | No    |
| pumpingCost          | Pumping cost of a hydro pump unit.<br>Pattern value = [\d]+\.\?\d?\d?   | float    | No    |
| pumpShutDownCost     | The Cost to shut down a pumped-storage Hydro Unit (in pumping mode or a Pump).  | float    | No    |

| Element                                      | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| RegisteredGenerator.mrid                     | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | Yes   |
| SchedulingCoordinator.mrid                   | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | Yes   |
| ProductBid.description                       | Description of Product Bid. (1-32 characters)   | string   | No    |
| ProductBid.mrid                              | MRID stands for master resource identifier which should be globally unique.   | string   | No    |
| ProductBid.MarketProduct.description         | Description of Market Product. (1-32 characters)  | string   | No    |
| ProductBid.MarketProduct.marketProductType   | Market product type. Valid values are:<br>EN – Energy type<br>RU – Regulation up<br>RD – Regulation down<br>SR – spinning reserve<br>NR – Non-spinning reserve<br>RC – Residual Unit Commitment<br>LFU – Load Following Up<br>LFD – Load following Down   | string   | Yes   |
| ProductBid.MarketProduct.selfSchedType       | Self schedule bid contract type. Valid values are:<br>PT – Price Taker<br>LPT – Lower Price Taker<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right<br>RMT – Regulatory Must Take<br>RA – Resource Adequacy<br>SP – Self Provision<br>BAS – Base Load<br>LOF – Load<br>WHL - Wheeling | string   | No    |
| ProductBid.BidSelfSched.description          | Description of Bid Self Schedule. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.timeIntervalStart    | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.timeIntervalEnd      | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.selfSchedMw          | Self Schedule MW value for the referenced commodity.  | float    | No    |
| ProductBid.BidSelfSched.selfSchedSptResource | PT Export Self Sched Support Resource   | String   | No    |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.BidSelfSched.balancingFlag                | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR is balanced with another self-schedule using the same TR ID. | YesNo    | No    |
| ProductBid.BidSelfSched.priorityFlag                 | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM.                          | YesNo    | No    |
| ProductBid.BidSelfSched.wheelingTransactionReference | A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources   | String   | No    |
| ProductBid.BidSelfSched.referenceType                | Indication of which class is referenced by the self schedule; resulting in the following choices: <ul style="list-style-type: none"> <li>• ETC</li> <li>• TOR</li> <li>• WHL</li> <li>• RMT</li> </ul>                  | String   | No    |
| ProductBid.BidSelfSched.pumpSelfSchedMw              | Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null, then the unit is in pumping mode.  | float    | No    |
| ProductBid.BidSelfSched.AdjacentCASet/mrid           | Goups Adjacent Control Areas.   | String   | No    |
| ProductBid.BidSelfSched.HostControlArea/mrid         | A HostControlArea has a set of tie points and a set of generator controls (i.e., AGC). It also has a total load, including transmission and distribution losses.  | String   | No    |
| ProductBid.BidSelfSched.ContractRight.description    | Description of Contract Right. (1-32 characters)  | string   | No    |
| ProductBid.BidSelfSched.ContractRight.mrid           | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | Yes   |
| ProductBid.UnitSchedule.timeIntervalStart            | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.UnitSchedule.timeIntervalEnd              | End of the time interval in which bid is valid.   | dateTime | Yes   |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.UnitSchedule.parameterID                            | Parameter ID. Valid values are:<br>HOURLY_PREDISPATCH – hourly pre-dispatch<br>PUMPING_LEVEL – pumping level<br>PUMPING_COST<br>PUMPING_SHUTDOWN_COST | string   | Yes   |
| ProductBid.UnitSchedule.parameterType                          | Indication of the type of parameter being defined (STRING or FLOAT).  | string   | Yes   |
| ProductBid.UnitSchedule.parameterValue                         | Parameter value which replaces corresponding default values from input bid data.  | float    | No    |
| ProductBid.UnitSchedule.parameterStringValue                   | If ProductBid.UnitSchedule = STRING then value = YES. Else value = NO.  | string   | No    |
| ProductBid.BidSchedule.description                             | Description of Bid Schedule. (1-32 characters)  | string   | No    |
| ProductBid.BidSchedule.timeIntervalStart                       | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSchedule.timeIntervalEnd                         | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.description               | Description of Bid Price Curve. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.mrid                      | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.xAxisData  | The data value of the X-axis variable..   | float    | No    |
| ProductBid.BidSchedule.BidPriceCurve.CurveSchedData.y1AxisData | The data value of the Y-axis variable, depending on the Y-axis units.<br>Pattern value = [\d]+.\.?[\d]\d?   | float    | No    |
| ProductBid.BidDistributionFactor.description                   | Description of Bid Distribution Factor. (1-32 characters)   | string   | No    |
| ProductBid.BidDistributionFactor.timeIntervalStart             | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidDistributionFactor.timeIntervalEnd               | End of the time interval n which bid is valid.  | dateTime | Yes   |

| Element   | Data Description   | Type   | Req'd |
|---|--|--------|-------|
| ProductBid.BidDistributionFactor.PnodeDistributionFactor.factor               | Used to calculate "participation" of Pnode in an AggregatePnode. For example, for regulation region this factor is 1 and total sum of all factors for a specific regulation region does not have to be 1. For pricing zone the total sum of all factors has to value must be => 0 and <= 1                                   | float  | No    |
| ProductBid.BidDistributionFactor.PnodeDistributionFactor.IndividualPnode.mrid | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string | No    |
| RampRateCurve.description   | Description of Ramp Rate Curve. (1-32 characters)  | string | No    |
| RampRateCurve.rampRateType  | [Not supported in MRTU Release 1.]   | string | No    |
| RampRateCurve.constraintRampType  | The condition that identifies whether a Generating Resource should be constrained from Ancillary Service provision if its Schedule or Dispatch change across Trading Hours or Trading Intervals requires more than a specified fraction of the duration of the Trading Hour or Trading Interval. Valid values are Fast/Slow. | string | No    |
| RampRateCurve.CurveSched.Data.xAxisData                                       | The data value of the X-axis variable.,  | float  | No    |
| RampRateCurve.CurveSched.Data.y1AxisData                                      | The data value of the Y-axis variable, depending on the Y-axis units.  | float  | No    |
| RampRateCurve.CurveSched.Data.prohibitedZone                                  | This attribute is set to YES if the corresponding segment of the price_curve overlaps with unit prohibited zone.   | string | No    |
| StartUpCostCurve.description  | Description of Start Up Cost Curve. (1-32 characters)  | string | No    |
| StartUpCostCurve.CurveSched.Data.xAxisData                                    | The data value of the X-axis variable, depending on the X-axis units.  | float  | No    |
| StartUpCostCurve.CurveSched.Data.y1AxisData                                   | The data value of the Y-axis variable, depending on the Y-axis units.<br>Pattern value = [\d]+.\?\d?\d?  | float  | No    |
| StartUpTimeCurve.description  | Description of Start Up Time Curve. (1-32 characters)  | string | No    |
| StartUpTimeCurve.CurveSched.Data.xAxisData                                    | The data value of the X-axis variable, depending on the X-axis units.  | float  | No    |
| StartUpTimeCurve.CurveSched.Data.y1AxisData                                   | The data value of the Y-axis variable, depending on the Y-axis units.<br>Pattern value = [\d]+.\?\d?\d?  | float  | No    |

| Element                                  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| BidError.mrid                            | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| BidError.errorMessage                    | Text of an error or warning message.  | string   | Yes   |
| BidError.errorPriority                   | Priority of an error or warning   | Integer  | Yes   |
| BidError.ruleID                          | SIBR Market Rule Identifier.  | integer  | Yes   |
| BidError.startTime                       | Start date/time of the Bid component, for which this error or warning is logged.  | dateTime | Yes   |
| BidError.endTime                         | End date/time of the Bid component, for which this error or warning is logged.  | dateTime | Yes   |
| BidError.logTimeStamp                    | Timestamp of logged message.  | dateTime | Yes   |
| BidError.MarketProduct.description       | Description of Market Product. (1-32 characters)  | string   | No    |
| BidError.MarketProduct.marketProductType | Market product type. Valid values are:<br>EN – Energy type<br>RU – Regulation up<br>RD – Regulation down<br>SR – spinning reserve<br>NR – Non-spinning reserve<br>RC – Residual Unit Commitment   | string   | Yes   |
| BidError.MarketProduct.selfSchedType     | Self schedule bid contract type. Valid values are:<br>PT – Price Taker<br>LPT – Lower Price Taker<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right<br>RMT – Regulatory Must Take<br>RA – Resource Adequacy | string   | No    |
| <b>LoadBid</b>                           |   |          |       |
| description                              | Description of Load Bid. (1-32 characters)  | string   | No    |
| name                                     | Unique name for Load Bid. (1-32 characters)   | string   | No    |
| mrid                                     | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string   | No    |
| lastModified                             | Time and date the document was last modified.   | dateTime | No    |
| startTime                                | Start time and date for which bid applies.  | dateTime | Yes   |
| stopTime                                 | Stop time and date for which bid is applies.  | dateTime | Yes   |

| Element                                    | Data Description  | Type   | Req'd |
|--|---|--------|-------|
| marketType                                 | The market type, DAM or RTM.  | string | Yes   |
| contingencyAvailFlag                       | Contingent operating reserve availability. Valid value = YES or NO. Resource is available to participate with capacity only in contingency dispatch.  | string | No    |
| bidStatus                                  | Bid status:<br>RJ - Rejected Bid<br>I - Invalid Bid<br>CV - Conditionally valid bid<br>CM - Conditionally modified bid<br>V - Valid bid<br>M - Modified bid<br>CX - Canceled bid<br>O - Obsolete bid<br>S – Submit in Queue                             | string | No    |
| CreatedISO                                 | Implies if the bid was created by the ISO versus submitted by an SC   | string | no    |
| RegisteredLoad.mrid                        | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string | Yes   |
| SchedulingCoordinator.mrid                 | MRID stands for master resource identifier which should be globally unique. (1-32 characters)   | string | Yes   |
| ProductBid.description                     | Description Product Bid. (1-32 characters)  | string | No    |
| ProductBid.mrid                            | MRID stands for master resource identifier which should be globally unique.   | string | No    |
| ProductBid.MarketProduct.description       | Description Market Product. (1-32 characters)   | string | No    |
| ProductBid.MarketProduct.marketProductType | Market product type. Valid values are:<br>EN – Energy type<br>RU – Regulation up<br>RD – Regulation down<br>SR – spinning reserve<br>NR – Non-spinning reserve<br>RC – Residual Unit Commitment<br>LFU – Load Following Up<br>LFD – Load Following Down | string | Yes   |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.MarketProduct.selfSchedType               | Self schedule bid contract type. Valid values are:<br>PT – Price Taker<br>LPT – Lower Price Taker<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right<br>RMT – Regulatory Must Take<br>RA – Resource Adequacy<br>SP – Self Provision<br>BAS – Base Load<br>LOF – Load Following<br>WHL - Wheeling | string   | No    |
| ProductBid.BidSelfSched.description                  | Description of Bid Self Sched. (1-32 characters)  | string   | No    |
| ProductBid.BidSelfSched.timeIntervalStart            | Start of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.timeIntervalEnd              | End of the time interval in which bid is valid.   | dateTime | Yes   |
| ProductBid.BidSelfSched.selfSchedMw                  | Self Schedule MW value for the referenced commodity   | float    | No    |
| ProductBid.BidSelfSched.selfSchedSptResource         | PT Export Self Sched Support Resource   | String   | No    |
| ProductBid.BidSelfSched.balancingFlag                | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR is balanced with another self-schedule using the same TR ID.   | YesNo    | No    |
| ProductBid.BidSelfSched.priorityFlag                 | This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM.  | YesNo    | No    |
| ProductBid.BidSelfSched.wheelingTransactionReference | A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources   | String   | No    |
| ProductBid.BidSelfSched.referenceType                | Indication of which class is referenced by the self schedule; resulting in the following choices: <ul style="list-style-type: none"><li>• ETC</li><li>• TOR</li><li>• WHL</li><li>• RMT</li></ul>   | String   | No    |

| Element   | Data Description   | Type     | Req'd |
|---|--|----------|-------|
| ProductBid.BidSelfSched.pumpSelfSchedMw           | Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null, then the unit is in pumping mode.   | float    | No    |
| ProductBid.BidSelfSched.AdjacentCASet/mrid        | Goups Adjacent Control Areas.  | String   | No    |
| ProductBid.BidSelfSched.HostControlArea/mrid      | A HostControlArea has a set of tie points and a set of generator controls (i.e., AGC). It also has a total load, including transmission and distribution losses. | String   | No    |
| ProductBid.BidSelfSched.ContractRight.description | Description of Contract Right. (1-32 characters)   | string   | No    |
| ProductBid.BidSelfSched.ContractRight.mrid        | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string   | Yes   |
| ProductBid.UnitSchedule.timeIntervalStart         | Start of the time interval in which bid is valid.  | dateTime | Yes   |
| ProductBid.UnitSchedule.timeIntervalEnd           | End of the time interval in which bid is valid.  | dateTime | Yes   |
| ProductBid.UnitSchedule.parameterID               | Parameter ID. Valid values are:<br>HOURLY_PREDISPATCH – hourly pre-dispatch<br>PUMPING_LEVEL – pumping level<br>PUMPING_COST<br>PUMPING_SHUTDOWN_COST            | string   | Yes   |
| ProductBid.UnitSchedule.parameterType             | Indication of the type of parameter being defined (STRING or FLOAT).   | string   | Yes   |
| ProductBid.UnitSchedule.parameterValue            | Parameter value which replaces corresponding default values from input bid data.   | float    | No    |
| ProductBid.UnitSchedule.parameterStringValue      | If ProductBid.UnitSchedule = STRING then value = YES. Else value = NO.   | string   | No    |
| ProductBid.BidSchedule.description                | Description of Bid Schedule. (1-32 characters)   | string   | No    |
| ProductBid.BidSchedule.timeIntervalStart          | Start of the time interval in which bid is valid.  | dateTime | Yes   |
| ProductBid.BidSchedule.timeIntervalEnd            | End of the time interval in which bid is valid.  | dateTime | Yes   |
| ProductBid.BidSchedule.BidPriceCurve.description  | Description of Bid Price Curve. (1-32 characters)  | string   | No    |
| ProductBid.BidSchedule.BidPriceCurve.mrid         | MRID stands for master resource identifier which should be globally unique. (1-32 characters)  | string   | No    |

| Element  | Data Description  | Type     | Req'd |
|--|---|----------|-------|
| ProductBid.BidSchedule.<br>BidPriceCurve.CurveSchedData.<br>xAxisData  | The data value of the X-axis variable.  | float    | No    |
| ProductBid.BidSchedule.BidPrice<br>Curve.CurveSchedData.<br>y1AxisData | The data value of the Y-axis variable, depending<br>on the Y-axis units.<br><br>Pattern value = [\d]+.\?\d?\d?  | float    | No    |
| BidError.mrid  | MRID stands for master resource identifier which<br>should be globally unique. (1-32 characters)  | string   | No    |
| BidError.errPriority   | Message level:<br>0 = highest priority<br>1-4 = different level of error<br>5 = warning message<br>6 = Information status   | integer  | Yes   |
| BidError,errMessage  | Text of an error or warning message.  | string   | Yes   |
| BidError.ruleID  | SIBR Market Rule Identifier.  | integer  | Yes   |
| BidError.startTime   | Start date/time of the Bid component, for<br>which this error or warning is logged.   | dateTime | Yes   |
| BidError.endTime   | End date/time of the Bid component, for which<br>this error or warning is logged.   | dateTime | Yes   |
| BidError.logTimeStamp  | Timestamp of logged message.  | dateTime | Yes   |
| BidError.MarketProduct.<br>description                                 | Description of Market Product. (1-32 characters)  | string   | No    |
| BidError.MarketProduct.<br>marketProductType                           | Market product type. Valid values are:<br><br>EN – Energy type<br>RU – Regulaion up<br>RD – Regulaion down<br>SR – spinning reserve<br>NR – Non-spinning reserve<br>RC – Residual Unit Commitment   | string   | Yes   |
| BidError.MarketProduct.<br>selfSchedType                               | Self schedule bid contract type. Valid values are:<br><br>PT – Price Taker<br>LPT – Lower Price Taker<br>ETC – Existing transmission contract<br>TOR – Transmission ownership right<br>RMT – Regulatory Must Take<br>RA – Resource Adequacy | string   | No    |

### 5.7.2 Schema (BidResult.xsd)

////////// start ///////////

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:m="http://www.caiso.com/soa/2008-08-11/BidResult.xsd"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.caiso.com/soa/2008-08-11/BidResult.xsd"
  elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xs:element name="BidResult" type="m:BidResult"/>
  <xs:complexType name="BidResult">
    <xs:sequence>
      <xs:element name="MessageHeader" type="m:MessageHeader"
        minOccurs="0"/>
      <xs:element name="MessagePayload"
        type="m:MessagePayload"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="MessageHeader">
    <xs:annotation>
      <xs:documentation>Message header containing descriptive
      information about the message.</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="TimeDate" type="xs:dateTime">
        <xs:annotation>
          <xs:documentation>Application level relevant time
          and date for when this instance of the message was produced.</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="Source" type="xs:string">
        <xs:annotation>
          <xs:documentation>Source system that publishes
          the message. For CAISO, examples include ADS, ALFS, CAP, CRR, EMS, ETCC,
          FNM, IFM, MF, PI, RLC, RTM, SaMC, SIBR, SLIC, etc.</xs:documentation>
        </xs:annotation>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="MessagePayload">
    <xs:sequence>
```

```

        <xs:element name="GeneratingBid" type="m:GeneratingBid"
minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="InterTieBid" type="m:InterTieBid"
minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>
                <xs:documentation>This class represents the inter
tie bid</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="LoadBid" type="m:LoadBid" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="GeneratingBid">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="name" type="m:name" minOccurs="0">
            <xs:annotation>
                <xs:documentation>Unique name among objects
owned by the same parent.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="mrid" type="xs:string" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="lastModified" type="xs:dateTime">
            <xs:annotation>
                <xs:documentation>Time and date the document
was last modified. Documents may potentially be modified many times during their
lifetime.</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>

```

```

<xs:element name="startTime" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>Start time and date for which
bid applies.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="stopTime" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>Stop time and date for which
bid is applicable.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="marketType" type="m:MarketType">
    <xs:annotation>
        <xs:documentation>The market type, DAM or
RTM.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="energyMaxDay" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Maximum amount of energy
per day which can be produced during the trading period in MWh</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="energyMinDay" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Minimum amount of energy
per day which has to be produced during the trading period in MWh</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="contingencyAvailFlag" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>CAISO Extension contingent
operating reserve availability (Yes/No). Resource is available to participate with
capacity only in contingency dispatch. CleanBid Message: IFM, RUC, RTD,
RTPD</xs:documentation>
    </xs:annotation>
</xs:element>

```

```

<xs:element name="bidStatus" type="m:bidStatus"/>
<xs:element name="createdISO" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>A Yes indicates that this bid
was created by the ISO.</xs:documentation>
    </xs:annotation>
    </xs:element>
<xs:element name="noLoadCost" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Resource fixed no load
cost.</xs:documentation>
    </xs:annotation>
    </xs:element>
<xs:element name="RegisteredGenerator"
type="m:RegisteredGeneratorNmReq" minOccurs="0"/>
    <xs:element name="SchedulingCoordinator"
type="m:SchedulingCoordinatorNmReq">
        <xs:annotation>
            <xs:documentation>All CAISO market participants
are represented by Scheduling Coordinators (SCs) that are registered with the CAISO
(section 5.1.2 IFM SRS). One participant can register multiple SCs with the CAISO.
Many participants can do business with the CAISO using a single SC. Each generator
resource can only be scheduled by one SC. One SC can schedule multiple generators. A
load scheduling point can be used by multiple SCs. Each SC can schedule load at
multiple scheduling points. Each SC can have more than one load schedule at any load
scheduling point as long as each load schedule at the same load scheduling point has a
separate resource ID and settlement-quality meter. An inter-tie scheduling point can be
used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling
points. An SC can have multiple interchange schedules at the same inter-tie scheduling
point by assigning a unique interchange identifier to each interchange schedule.
Currently, the type of SC includes: Scheduling Coordinator (MDAS certified) SC of
Inter-SC Trades Only (not MDAS certified) SC & FTR holder SC, FTR holder, TO ,
& UDC.</xs:documentation>
        </xs:annotation>
    </xs:element>
<xs:element name="ProductBid" type="m:ProductBid_G"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>

```

```

<xs:documentation>Component of a bid that
pertains to one market product.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="RampRateCurve" type="m:RampRateCurve"
minOccurs="0" maxOccurs="unbounded">
<xs:annotation>
<xs:documentation>Ramp rate as a function of
resource MW output</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="StartUpCostCurve"
type="m:StartUpCostCurve" minOccurs="0">
<xs:annotation>
<xs:documentation>Startup costs and time as a
function of down time. Relationship between unit startup cost (Y1-axis) vs. unit elapsed
down time (X-axis). For CAISO, the Y2-axis is not used.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="StartUpTimeCurve"
type="m:StartUpTimeCurve" minOccurs="0">
<xs:annotation>
<xs:documentation>Startup time curve as a function
of down time, where time is specified in minutes. Relationship between unit startup time
(Y1-axis) vs. unit elapsed down time (X-axis).</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="BidError" type="m:BidError" minOccurs="0"
maxOccurs="unbounded">
<xs:annotation>
<xs:documentation>This class represent the error
information for a bid</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="description">
<xs:restriction base="xs:string">
<xs:maxLength value="32"/>
<xs:minLength value="1"/>
</xs:restriction>
```

```
</xs:simpleType>
<xs:simpleType name="name">
    <xs:restriction base="xs:string">
        <xs:maxLength value="32"/>
        <xs:minLength value="1"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="MarketType">
    <xs:annotation>
        <xs:documentation>market type</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
        <xs:enumeration value="DAM"/>
        <xs:enumeration value="RTM"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="YesNo">
    <xs:restriction base="xs:string">
        <xs:enumeration value="YES"/>
        <xs:enumeration value="NO"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="bidStatus">
    <xs:restriction base="xs:string">
        <xs:enumeration value="RP"/>
        <xs:enumeration value="RJ"/>
        <xs:enumeration value="I"/>
        <xs:enumeration value="CV"/>
        <xs:enumeration value="CM"/>
        <xs:enumeration value="V"/>
        <xs:enumeration value="M"/>
        <xs:enumeration value="CX"/>
        <xs:enumeration value="O"/>
        <xs:enumeration value="G"/>
        <xs:enumeration value="HR"/>
        <xs:enumeration value="HI"/>
        <xs:enumeration value="MI"/>
        <xs:enumeration value="S"/>
        <xs:enumeration value="SO"/>
    </xs:restriction>
</xs:simpleType>
```

```

<xs:complexType name="RegisteredGeneratorNmReq">
  <xs:sequence>
    <xs:element name="mrid" type="m:mrid">
      <xs:annotation>
        <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
      </xs:annotation>
    </xs:element>
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="mrid">
  <xs:restriction base="xs:string">
    <xs:maxLength value="32"/>
    <xs:minLength value="1"/>
  </xs:restriction>
</xs:simpleType>
<xs:complexType name="SchedulingCoordinatorNmReq">
  <xs:sequence>
    <xs:element name="mrid" type="m:mrid">
      <xs:annotation>
        <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
      </xs:annotation>
    </xs:element>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ProductBid_G">
  <xs:sequence>
    <xs:element name="description" type="m:description"
minOccurs="0">
      <xs:annotation>
        <xs:documentation>Description of the object or
instance.</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="mrid" type="m:mrid" minOccurs="0">
      <xs:annotation>
        <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
      </xs:annotation>
    </xs:element>
  </xs:sequence>
</xs:complexType>

```

```

<xs:element name="MarketProduct"
type="m:RawBidSetMarketProduct">
    <xs:annotation>
        <xs:documentation>A product traded by an RTO
(e.g., energy, 10 minute spinning reserve).Ancillary service product examples
include:Regulation UpRegulation DnSpinning ReserveNon-Spinning ReserveOperating
Reserve</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="BidSelfSched" type="m:BidSelfSched"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Defines self schedule values to
be used for specified time intervals. Wheeling Capacity will be specified when
marketProductType = EN and selfSchedType = WHL as
BidSelfSched.selfScheduleMw</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="UnitSchedule"
type="m:UnitScheduleFloatStringOpt" minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>CAISO Extension Defines
values that can be changed hourly within a daily bid. Provides indication of parameter
type (string or float) and then a location for the value.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="BidSchedule" type="m:BidSchedule"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>CAISO Extension Defines bid
schedules to allow a product bid to use specified bid price curves for different time
intervals.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="BidDistributionFactor"
type="m:BidDistributionFactor" minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>This class allows SC to input
different time intervals for distribution factors</xs:documentation>
    </xs:annotation>
</xs:element>

```

```

        </xs:sequence>
    </xs:complexType>
<xs:complexType name="RawBidSetMarketProduct">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            <xs:annotation>
                <xs:element>
                    <xs:element name="marketProductType"
type="m:marketProductType">
                        <xs:annotation>
                            <xs:documentation>Market product type includes:
EN (Energy) RU (Regulation Up) RD (Regulation Dn) SR (Spinning Reserve) NR (Non-
Spinning Reserve) RC (RUC)</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="selfSchedType" type="m:selfSchedType"
minOccurs="0">
                        <xs:annotation>
                            <xs:documentation>This attribute is used to specify
if a bid is a self sched bid. If so what self sched type is it. The possible values are shown
as follow but not limited to: "NA" - Not Applicable" 'GT' - Generic type 'ETC' - Existing
transmission contract 'TOR' - Transmission ownership right 'RMR' - Reliability must run
'RGMR' - Regulatory must run 'ORFC' - Operating reserve flagged for contingency
'NMSR' - Non must offer supply reduction 'NLRI' - Non participating load
reduction/increase 'MOSR' - Must offer suply reduction "RMT" - Relaiability must take
This attribute is originally defined in the BidSelfSched class (proposed by
SIEMENS)</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
<xs:simpleType name="marketProductType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="EN"/>
        <xs:enumeration value="RU"/>
        <xs:enumeration value="RD"/>
        <xs:enumeration value="SR"/>

```

```

<xs:enumeration value="NR"/>
<xs:enumeration value="RC"/>
<xs:enumeration value="LFU"/>
<xs:enumeration value="LFD"/>
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="selfSchedType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="PT"/>
    <xs:enumeration value="ETC"/>
    <xs:enumeration value="TOR"/>
    <xs:enumeration value="RMT"/>
    <xs:enumeration value="SP"/>
    <xs:enumeration value="RA"/>
    <xs:enumeration value="BAS"/>
    <xs:enumeration value="LOF"/>
    <xs:enumeration value="WHL"/>
    <xs:enumeration value="LPT"/>
  </xs:restriction>
</xs:simpleType>
<xs:complexType name="BidSelfSched">
  <xs:sequence>
    <xs:element name="description" type="m:description"
minOccurs="0">
      <xs:annotation>
        <xs:documentation>Description of the object or
instance.</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="timeIntervalStart" type="xs:dateTime">
      <xs:annotation>
        <xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="timeIntervalEnd" type="xs:dateTime">
      <xs:annotation>
        <xs:documentation>End of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
      </xs:annotation>
    </xs:element>
  </xs:sequence>
</xs:complexType>

```

```

<xs:element name="selfSchedMw" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Self scheduled
value</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="balancingFlag" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>This is a Y/N flag for a self-
schedule of a resource per market per date and hour, using a specific TR ID. It indicates
whether a self-schedule using a TR is balanced with another self-schedule using the same
TR ID.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="priorityFlag" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>This is a Y/N flag for a self-
schedule of a resource per market per date and hour, using a specific TR ID. It indicates
whether a self-schedule using a TR has scheduling priority in
IFM/RTM.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="wheelingTransactionReference"
type="xs:string" minOccurs="0">
    <xs:annotation>
        <xs:documentation>A unique identifier of a
wheeling transaction. A wheeling transaction is a balanced Energy exchange among
Supply and Demand Resources.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="referenceType"
type="m:SelfSchedReferenceType" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Indication of which class is
referenced by the self schedule.</xs:documentation>
    </xs:annotation>
</xs:element>
```

```

<xs:element name="pumpSelfSchedMw" type="xs:float"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Contains the PT, ETC, TOR
pumping self schedule quantity. If this value is not null, then the unit is in pumping
mode.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="selfSchedSptResource" type="xs:string"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>PT Export Self Sched Support
Resource</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="ContractRight"
type="m:BidSetContractRight" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Provides definition of
Transmission Ownership Right and Existing Transmission Contract identifiers for use by
SCUC. RMR contract hosting (MasterFile): Startup lead time, Contract Service Limits,
Max Service Hours, Max MWhs, Max Start-ups, Ramp Rate, Max Net Dependable
Capacity, Min Capacity and Unit Substitution for IFM/RTM to
retrieve;</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="AdjacentCASet"
type="m:AdjacentCASetNmReq" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Groups Adjacent Control
Areas</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="HostControlArea"
type="m:HostControlAreaNmReq" minOccurs="0">
    <xs:annotation>
        <xs:documentation>A HostControlArea has a set of
tie points and a set of generator controls (i.e., AGC). It also has a total load, including
transmission and distribution losses.</xs:documentation>
    </xs:annotation>
</xs:element>

```

```

        </xs:sequence>
    </xs:complexType>
<xs:simpleType name="SelfSchedReferenceType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="ETC"/>
        <xs:enumeration value="TOR"/>
        <xs:enumeration value="ECA"/>
        <xs:enumeration value="ACA"/>
        <xs:enumeration value="WHL"/>
        <xs:enumeration value="RMT"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="BidSetContractRight">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="mrid" type="m:mrid" minOccurs="0">
                <xs:annotation>
                    <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
                </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
<xs:complexType name="AdjacentCASetNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
<xs:complexType name="HostControlAreaNmReq">
    <xs:sequence>

```

```

<xs:element name="mrid" type="m:mrid">
    <xs:annotation>
        <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="UnitScheduleFloatStringOpt">
    <xs:sequence>
        <xs:element name="timeIntervalStart" type="xs:dateTime">
            <xs:annotation>
                <xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="timeIntervalEnd" type="xs:dateTime">
            <xs:annotation>
                <xs:documentation>End of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="parameterID" type="m:parameterID">
            <xs:annotation>
                <xs:documentation>Parameter ID. Valid values
such as PUMPING_LEVEL</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="parameterType" type="m:ParameterType">
            <xs:annotation>
                <xs:documentation>Indication of the type of
parameter being defined (String or Float).</xs:documentation>
            </xs:annotation>
</xs:element>
        <xs:element name="parameterValue" type="xs:float"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Parameter value which replaces
corresponding default values from input bid data</xs:documentation>
            </xs:annotation>
</xs:element>

```

```

<xs:element name="parameterStringValue" type="xs:string"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>Parameter value which replaces
corresponding default values from input bid data</xs:documentation>
    </xs:annotation>
    </xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="parameterID">
    <xs:restriction base="xs:string">
        <xs:enumeration value="HOURLY_PREDISPATCH"/>
        <xs:enumeration value="PUMPING_LEVEL"/>
        <xs:enumeration value="NERC_TAG"/>
        <xs:enumeration value="SCHEDULING_POINT"/>
        <xs:enumeration value="PUMPING_COST"/>
        <xs:enumeration value="PUMPING_SHUTDOWN_COST"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="ParameterType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="STRING"/>
        <xs:enumeration value="FLOAT"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="BidSchedule">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
            </xs:element>
        <xs:element name="timeIntervalStart" type="xs:dateTime">
            <xs:annotation>
                <xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
            </xs:annotation>
            </xs:element>
        <xs:element name="timeIntervalEnd" type="xs:dateTime">

```

```

<xs:annotation>
    <xs:documentation>End of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="BidPriceCurve" type="m:BidPriceCurve">
    <xs:annotation>
        <xs:documentation>Relationship between unit
operating price in $/hour (Y-axis) and unit output in MW (X-axis).</xs:documentation>
    </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="BidPriceCurve">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="mrid" type="m:mrid" minOccurs="0">
                <xs:annotation>
                    <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
                </xs:annotation>
                </xs:element>
                <xs:element name="CurveSchedData"
type="m:BidResultPriceCurveSchedData" minOccurs="0" maxOccurs="unbounded">
                    <xs:annotation>
                        <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
                    </xs:annotation>
                    </xs:element>
                    </xs:sequence>
                </xs:complexType>
                <xs:complexType name="BidResultPriceCurveSchedData">
                    <xs:sequence>
                        <xs:element name="xAxisData" type="xs:float" minOccurs="0">
                            <xs:annotation>

```

```

<xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="y1AxisData" type="m:y1AxisData"
minOccurs="0">
<xs:annotation>
<xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="y1AxisData">
<xs:restriction base="xs:float">
<xs:pattern value="[-+]?[d]+\.[?d?\d?]">
</xs:restriction>
</xs:simpleType>
<xs:complexType name="BidDistributionFactor">
<xs:sequence>
<xs:element name="description" type="m:description"
minOccurs="0">
<xs:annotation>
<xs:documentation>Description of the object or
instance.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="timeIntervalStart" type="xs:dateTime">
<xs:annotation>
<xs:documentation>Start of the time interval in
which bid is valid (yyyy-mm-dd hh24: mi: ss).</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="timeIntervalEnd" type="xs:dateTime">
<xs:annotation>
<xs:documentation>End of the time interval n
which bid is valid (yyyy-mm-dd hh24: mi: ss)</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="PnodeDistributionFactor"
type="m:PnodeDistributionFactor" minOccurs="0" maxOccurs="unbounded">

```

```

<xs:annotation>
    <xs:documentation>This class allows SC to input
different distribution factors for pricing node</xs:documentation>
    </xs:annotation>
    </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="PnodeDistributionFactor">
    <xs:sequence>
        <xs:element name="factor" type="xs:float" minOccurs="0">
            <xs:annotation>
                <xs:documentation>Used to calculate
"participation" of Pnode in an AggregatePnode. For example, for regulation region this
factor is 1 and total sum of all factors for a specific regulation region does not have to be
1. For pricing zone the total sum of all factors has to be 1.</xs:documentation>
            </xs:annotation>
            </xs:element>
            <xs:element name="IndividualPnode"
type="m:IndividualPnodeNmOpt">
                <xs:annotation>
                    <xs:documentation>CleanBid Message: IFM, RUC,
RTP, RTPD.</xs:documentation>
                </xs:annotation>
                </xs:element>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="IndividualPnodeNmOpt">
                <xs:sequence>
                    <xs:element name="mrid" type="m:mrid" minOccurs="0">
                        <xs:annotation>
                            <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
                        </xs:annotation>
                        </xs:element>
                        </xs:sequence>
                    </xs:complexType>
                    <xs:complexType name="RampRateCurve">
                        <xs:sequence>
                            <xs:element name="description" type="m:description"
minOccurs="0">
                                <xs:annotation>

```

```

<xs:documentation>Description of the object or
instance.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="rampRateType" type="m:RampRateType">
    <xs:annotation>
        <xs:documentation>How ramp rate is applied (e.g.,
raise or lower, as when applied to a generation resource) Note: CAISO defines the ramp
rate type as an enumeration.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="constraintRampType"
type="m:ConstraintRampType" minOccurs="0">
        <xs:annotation>
            <xs:documentation>The condition that identifies
whether a Generating Resource should be constrained from Ancillary Service provision if
its Schedule or Dispatch change across Trading Hours or Trading Intervals requires more
than a specified fraction of the duration of the Trading Hour or Trading Interval. Valid
values are Fast/Slow</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="CurveSchedData"
type="m:BidResultRampRtCurveSchedData" minOccurs="0" maxOccurs="unbounded">
            <xs:annotation>
                <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
                </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
<xs:simpleType name="RampRateType">
    <xs:annotation>
        <xs:documentation>ramp rate curve type</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
        <xs:enumeration value="OP"/>
        <xs:enumeration value="REG"/>
        <xs:enumeration value="OP_RES"/>
        <xs:enumeration value="LD_DROP"/>
        <xs:enumeration value="LD_PICKUP"/>
        <xs:enumeration value="INTERTIE"/>
    
```

```

        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="ConstraintRampType">
        <xs:restriction base="xs:string">
            <xs:enumeration value="FAST"/>
            <xs:enumeration value="SLOW"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="BidResultRampRtCurveSchedData">
        <xs:sequence>
            <xs:element name="xAxisData" type="xs:float" minOccurs="0">
                <xs:annotation>
                    <xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
                </xs:annotation>
            </xs:element>
            <xs:element name="y1AxisData" type="xs:float" minOccurs="0">
                <xs:annotation>
                    <xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
                </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="StartUpCostCurve">
        <xs:sequence>
            <xs:element name="description" type="m:description"
minOccurs="0">
                <xs:annotation>
                    <xs:documentation>Description of the object or
instance.</xs:documentation>
                </xs:annotation>
            </xs:element>
            <xs:element name="CurveSchedData"
type="m:BidResultStartUpCostCurveSchedData" minOccurs="0"
maxOccurs="unbounded">
                <xs:annotation>
                    <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
                </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>

```

```

        </xs:sequence>
    </xs:complexType>
<xs:complexType name="BidResultStartUpCostCurveSchedData">
    <xs:sequence>
        <xs:element name="xAxisData" type="xs:float" minOccurs="0">
            <xs:annotation>
                <xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="y1AxisData" type="xs:float" minOccurs="0">
            <xs:annotation>
                <xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="StartUpTimeCurve">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="CurveSchedData"
type="m:BidResultStartUpTimeCurveSchedData" minOccurs="0"
maxOccurs="unbounded">
            <xs:annotation>
                <xs:documentation>Data point values for defining a
curve or schedule</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="BidResultStartUpTimeCurveSchedData">
    <xs:sequence>
        <xs:element name="xAxisData" type="xs:float" minOccurs="0">
            <xs:annotation>

```

```

<xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="y1AxisData" type="xs:float" minOccurs="0">
<xs:annotation>
<xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="BidError">
<xs:sequence>
<xs:element name="mrid" type="m:mrid" minOccurs="0">
<xs:annotation>
<xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="errPriority" type="xs:integer">
<xs:annotation>
<xs:documentation>Priority number for the error
message</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="errMessage" type="xs:string">
<xs:annotation>
<xs:documentation>error
message</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="ruleID" type="xs:integer"/>
<xs:element name="startTime" type="xs:dateTime"
minOccurs="0">
<xs:annotation>
<xs:documentation>hour wihthin the bid for which
the error applies</xs:documentation>
</xs:annotation>
</xs:element>
```

```

<xs:element name="endTime" type="xs:dateTime"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>hour wihthin the bid for which
the error applies</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="logTimeStamp" type="xs:dateTime"/>
<xs:element name="MarketProduct"
type="m:RawBidSetMarketProduct" minOccurs="0">
    <xs:annotation>
        <xs:documentation>A product traded by an RTO
(e.g., energy, 10 minute spinning reserve).Ancillary service product examples
include:Regulation UpRegulation DnSpinning ReserveNon-Spinning ReserveOperating
Reserve</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="InterTieBid">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
</xs:element>
<xs:element name="name" type="m:name" minOccurs="0">
            <xs:annotation>
                <xs:documentation>Unique name among objects
owned by the same parent.</xs:documentation>
            </xs:annotation>
</xs:element>
<xs:element name="mrid" type="xs:string" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
</xs:element>
<xs:element name="lastModified" type="xs:dateTime">

```

```

<xs:annotation>
    <xs:documentation>Time and date the document
was last modified. Documents may potentially be modified many times during their
lifetime.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="startTime" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>Start time and date for which
bid applies.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="stopTime" type="xs:dateTime">
        <xs:annotation>
            <xs:documentation>Stop time and date for which
bid is applicable.</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="marketType" type="m:MarketType">
            <xs:annotation>
                <xs:documentation>The market type, DAM or
RTM.</xs:documentation>
                </xs:annotation>
            </xs:element>
            <xs:element name="contingencyAvailFlag" type="m:YesNo"
minOccurs="0">
                <xs:annotation>
                    <xs:documentation>CAISO Extension contingent
operating reserve availability (Yes/No). Resource is available to participate with
capacity only in contingency dispatch. CleanBid Message: IFM, RUC, RTD,
RTPD</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="bidStatus" type="m:bidStatus"/>
                <xs:element name="createdISO" type="m:YesNo"
minOccurs="0">
                    <xs:annotation>
                        <xs:documentation>A Yes indicates that this bid
was created by the ISO.</xs:documentation>
                    </xs:annotation>
                </xs:element>

```

```

<xs:element name="minHourlyBlock" type="xs:integer"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>The minimum hourly block for
an Inter-Tie Resource supplied within the bid.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="RegisteredInterTie"
type="m:RegisteredInterTieNmReq" minOccurs="0">
    <xs:annotation>
        <xs:documentation>This class represents the inter
tie resource CleanBid Message: BITS, (IFM, RUC, RTP, RTPD) &amp;
OASIS.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="SchedulingCoordinator"
type="m:SchedulingCoordinatorNmReq">
    <xs:annotation>
        <xs:documentation>All CAISO market participants
are represented by Scheduling Coordinators (SCs) that are registered with the CAISO
(section 5.1.2 IFM SRS). One participant can register multiple SCs with the CAISO.
Many participants can do business with the CAISO using a single SC. Each generator
resource can only be scheduled by one SC. One SC can schedule multiple generators. A
load scheduling point can be used by multiple SCs. Each SC can schedule load at
multiple scheduling points. Each SC can have more than one load schedule at any load
scheduling point as long as each load schedule at the same load scheduling point has a
separate resource ID and settlement-quality meter. An inter-tie scheduling point can be
used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling
points. An SC can have multiple interchange schedules at the same inter-tie scheduling
point by assigning a unique interchange identifier to each interchange schedule.
Currently, the type of SC includes: Scheduling Coordinator (MDAS certified) SC of
Inter-SC Trades Only (not MDAS certified) SC &amp; FTR holder SC, FTR holder, TO ,
&amp; UDC.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="ProductBid" type="m:ProductBid_I"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Component of a bid that
pertains to one market product.</xs:documentation>
    </xs:annotation>

```

```

</xs:element>
<xs:element name="RampRateCurve" type="m:RampRateCurve"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Ramp rate as a function of
resource MW output</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="BidError" type="m:BidError" minOccurs="0"
maxOccurs="unbounded">
        <xs:annotation>
            <xs:documentation>This class represent the error
information for a bid</xs:documentation>
        </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="RegisteredInterTieNmReq">
    <xs:sequence>
        <xs:element name="mrid" type="m:mrid">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>
            </xs:element>
        </xs:sequence>
</xs:complexType>
<xs:complexType name="ProductBid_I">
    <xs:sequence>
        <xs:element name="description" type="m:description"
minOccurs="0">
            <xs:annotation>
                <xs:documentation>Description of the object or
instance.</xs:documentation>
            </xs:annotation>
            </xs:element>
        <xs:element name="mrid" type="m:mrid" minOccurs="0">
            <xs:annotation>
                <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
            </xs:annotation>

```

```

</xs:element>
<xs:element name="MarketProduct"
type="m:RawBidSetMarketProduct">
    <xs:annotation>
        <xs:documentation>A product traded by an RTO
(e.g., energy, 10 minute spinning reserve).Ancillary service product examples
include:Regulation UpRegulation DnSpinning ReserveNon-Spinning ReserveOperating
Reserve</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="BidSelfSched" type="m:BidSelfSched"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Defines self schedule values to
be used for specified time intervals. Wheeling Capacity will be specified when
marketProductType = EN and selfSchedType = WHL as
BidSelfSched.selfScheduleMw</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="UnitSchedule"
type="m:UnitScheduleFloatStringOpt" minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>CAISO Extension Defines
values that can be changed hourly within a daily bid. Provides indication of parameter
type (string or float) and then a location for the value.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="BidSchedule" type="m:BidSchedule"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>CAISO Extension Defines bid
schedules to allow a product bid to use specified bid price curves for different time
intervals.</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="CurveSchedData">
    <xs:annotation>
        <xs:documentation>Data point values for defining a curve or
schedule</xs:documentation>

```

```

</xs:annotation>
<xs:sequence>
    <xs:element name="aliasName" type="xs:string" minOccurs="0">
        <xs:annotation>
            <xs:documentation>Free text name of the object or
instance.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="description" type="xs:string"
minOccurs="0">
        <xs:annotation>
            <xs:documentation>Description of the object or
instance.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="name" type="xs:string" minOccurs="0">
        <xs:annotation>
            <xs:documentation>Unique name among objects
owned by the same parent.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="pathName" type="xs:string" minOccurs="0">
        <xs:annotation>
            <xs:documentation>pathName is a concatenation of
all names from each container.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="mrid" type="xs:string" minOccurs="0">
        <xs:annotation>
            <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="rampData" type="xs:float" minOccurs="0">
        <xs:annotation>
            <xs:documentation>The data value of the rate-of-
change of the Y-axis variable with respect to the X-axis variable</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="rampDataValue" type="xs:float"
minOccurs="0">

```

```

<xs:annotation>
    <xs:documentation>The data value of the rate-of-
change of the Y-axis variable with respect to the X-axis variable ( 0 = instantaneous
change)</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="xAxisData" type="xs:float" minOccurs="0">
    <xs:annotation>
        <xs:documentation>The data value of the X-axis
variable, depending on the X-axis units</xs:documentation>
        </xs:annotation>
    </xs:element>
    <xs:element name="y1AxisData" type="xs:float" minOccurs="0">
        <xs:annotation>
            <xs:documentation>The data value of the first Y-
axis variable, depending on the Y-axis units</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="y2AxisData" type="xs:float" minOccurs="0">
            <xs:annotation>
                <xs:documentation>The data value of the second
Y-axis variable (if present), depending on the Y-axis units</xs:documentation>
                </xs:annotation>
            </xs:element>
            <xs:element name="prohibitedZone" type="m:YesNo"
minOccurs="0">
                <xs:annotation>
                    <xs:documentation>CAISO Extension This
attribute is set to YES if the corresponding segment of the price_curve overlaps with unit
prohibited zone. Proposed by SIEMENS team</xs:documentation>
                </xs:annotation>
            </xs:element>
            <xs:element name="segmentNumber" type="xs:integer"
minOccurs="0"/>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="LoadBid">
                <xs:sequence>
                    <xs:element name="description" type="m:description"
minOccurs="0">
                        <xs:annotation>

```

```

<xs:documentation>Description of the object or
instance.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="name" type="m:name" minOccurs="0">
    <xs:annotation>
        <xs:documentation>Unique name among objects
owned by the same parent.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="mrid" type="xs:string" minOccurs="0">
    <xs:annotation>
        <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="lastModified" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>Time and date the document
was last modified. Documents may potentially be modified many times during their
lifetime.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="startTime" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>Start time and date for which
bid applies.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="stopTime" type="xs:dateTime">
    <xs:annotation>
        <xs:documentation>Stop time and date for which
bid is applicable.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="marketType" type="m:MarketType">
    <xs:annotation>
        <xs:documentation>The market type, DAM or
RTM.</xs:documentation>
    </xs:annotation>
</xs:element>
```

```

<xs:element name="contingencyAvailFlag" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>CAISO Extension contingent
operating reserve availability (Yes/No). Resource is available to participate with
capacity only in contingency dispatch. CleanBid Message: IFM, RUC, RTD,
RTPD</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="bidStatus" type="m:bidStatus"/>
<xs:element name="createdISO" type="m:YesNo"
minOccurs="0">
    <xs:annotation>
        <xs:documentation>A Yes indicates that this bid
was created by the ISO.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="RegisteredLoad"
type="m:RegisteredLoadNmReq" minOccurs="0"/>
<xs:element name="SchedulingCoordinator"
type="m:SchedulingCoordinatorNmReq">
    <xs:annotation>
        <xs:documentation>All CAISO market participants
are represented by Scheduling Coordinators (SCs) that are registered with the CAISO
(section 5.1.2 IFM SRS). One participant can register multiple SCs with the CAISO.
Many participants can do business with the CAISO using a single SC. Each generator
resource can only be scheduled by one SC. One SC can schedule multiple generators. A
load scheduling point can be used by multiple SCs. Each SC can schedule load at
multiple scheduling points. Each SC can have more than one load schedule at any load
scheduling point as long as each load schedule at the same load scheduling point has a
separate resource ID and settlement-quality meter. An inter-tie scheduling point can be
used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling
points. An SC can have multiple interchange schedules at the same inter-tie scheduling
point by assigning a unique interchange identifier to each interchange schedule.
Currently, the type of SC includes: Scheduling Coordinator (MDAS certified) SC of
Inter-SC Trades Only (not MDAS certified) SC & FTR holder SC, FTR holder, TO ,
& UDC.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="ProductBid" type="m:ProductBid_L"
minOccurs="0" maxOccurs="unbounded">

```

```

<xs:annotation>
    <xs:documentation>Component of a bid that
pertains to one market product.</xs:documentation>
    </xs:annotation>
    </xs:element>
    <xs:element name="BidError" type="m:BidError" minOccurs="0"
maxOccurs="unbounded">
        <xs:annotation>
            <xs:documentation>This class represent the error
information for a bid</xs:documentation>
            </xs:annotation>
            </xs:element>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="RegisteredLoadNmReq">
        <xs:sequence>
            <xs:element name="mrid" type="m:mrid">
                <xs:annotation>
                    <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
                </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="ProductBid_L">
            <xs:sequence>
                <xs:element name="description" type="m:description"
minOccurs="0">
                    <xs:annotation>
                        <xs:documentation>Description of the object or
instance.</xs:documentation>
                    </xs:annotation>
                    </xs:element>
                <xs:element name="mrid" type="m:mrid" minOccurs="0">
                    <xs:annotation>
                        <xs:documentation>MRID stands for master
resource identifier which should be globally unique.</xs:documentation>
                    </xs:annotation>
                    </xs:element>
                <xs:element name="MarketProduct"
type="m:RawBidSetMarketProduct">

```

```

<xs:annotation>
    <xs:documentation>A product traded by an RTO
(e.g., energy, 10 minute spinning reserve).Ancillary service product examples
include:Regulation UpRegulation DnSpinning ReserveNon-Spinning ReserveOperating
Reserve</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="BidSelfSched" type="m:BidSelfSched"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>Defines self schedule values to
be used for specified time intervals. Wheeling Capacity will be specified when
marketProductType = EN and selfSchedType = WHL as
BidSelfSched.selfScheduleMw</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="UnitSchedule"
type="m:UnitScheduleFloatStringOpt" minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>CAISO Extension Defines
values that can be changed hourly within a daily bid. Provides indication of parameter
type (string or float) and then a location for the value.</xs:documentation>
    </xs:annotation>
</xs:element>
<xs:element name="BidSchedule" type="m:BidSchedule"
minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
        <xs:documentation>CAISO Extension Defines bid
schedules to allow a product bid to use specified bid price curves for different time
intervals.</xs:documentation>
    </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
</xs:schema>

```

////////// end //////////

## 5.8 Fault Return

The fault return message is the same for all services; see Section 2.9 for details.

## 6 Appendix– Archived Changes to XSD Files

---

| Updated Namespace              |          | <a href="http://www.caiso.com/soa/2006-07-15/RawBidSet.xsd">http://www.caiso.com/soa/2006-07-15/RawBidSet.xsd</a> |  |
|--------------------------------|----------|---|--|
| Class                          | Action   | Attribute   | Values   |
| UnitSchedule                   | Modified | UnitSchedParamType  | Deleted<br>MIN_ECONOMIC_MW<br>&<br>MAX_ECONOMIC_MW<br>from the choice list   |
| InterTieBid                    | Added    | ContingencyAvail  | YesNo  |
| MarketProduct                  | Modified | selfSchedType   | Modified the choice list<br>to be PT, ETC, TOR,<br>RMT, & SP.  |
| GeneratingBid                  | Added    | pumpShutDownCost  |  |
| InterTieBid                    | Added    | minHourlyBlock  |  |
| InterTieBid<br>(ResourceBid)   | Deleted  | exportImport  |  |
| GeneratingBid<br>(ResourceBid) | Modified | name  | Restricted Bid Name<br>length to 50 characters.  |
| InterTieBid<br>(ResourceBid)   | Modified | name  | Restricted Bid Name<br>length to 50 characters.  |
| LoadBid (ResourceBid)          | Modified | name  | Restricted Bid Name<br>length to 50 characters.  |
| UnitSchedule                   | Modified | UnitSchedParamType  | Deleted BASE_MW<br>from the choice list  |
| LoadBid                        | Deleted  | minLoadReductionCost  |  |
| LoadBid                        | Deleted  | loadRedInitiationTime   |  |
| LoadBid                        | Deleted  | loadRedInitiationCost   |  |
| LoadBid                        | Deleted  | RampRateCurve   | The RampRateCurve<br>was contained within<br>the LoadBid class. By<br>deleting this class, the<br>associated hierarchy<br>below RampRateCurve<br>was also deleted. |
| MarketProduct                  | Modified | selfSchedType   | Added RA to the choice<br>list.  |

| Updated Namespace           |          | <a href="http://www.caiso.com/soa/2006-07-15/RawBidSet.xsd">http://www.caiso.com/soa/2006-07-15/RawBidSet.xsd</a> |   |
|-----------------------------|----------|---|---|
| Class                       | Action   | Attribute   | Values  |
| CurveScheduleData           | Deleted  | prohibitedZone  | Previously was only visible in the RampRateCurve hierarchy. |
| ContractRight               | Modified | contractMW  | Moved to native XML datatype.                               |
| BidSelfSched                | Modified | selfSchedMw   | Moved to native XML datatype.                               |
| PnodeDistributionFactor     | Modified | factor  | Moved to native XML datatype.                               |
| PnodeDistributionFactor     | Modified | podLossFactor   | Moved to native XML datatype.                               |
| GeneratingBid (ResourceBid) | Modified | energyMaxDay  | Moved to native XML datatype.                               |
| GeneratingBid (ResourceBid) | Modified | energyMinDay  | Moved to native XML datatype.                               |
| GeneratingBid (ResourceBid) | Modified | minDispatchTime   | Moved to native XML datatype.                               |
| GeneratingBid               | Modified | maximumEconomicMW   | Moved to native XML datatype                                |
| GeneratingBid               | Modified | minimumEconomicMW   | Moved to native XML datatype                                |
| GeneratingBid               | Modified | noLoadCost  | Moved to native XML datatype                                |
| GeneratingBid               | Modified | pumpingCost   | Moved to native XML datatype                                |
| GeneratingBid               | Modified | pumpShutDownCost  | Moved to native XML datatype                                |

| Updated Namespace |        | <a href="http://www.caiso.com/soa/2006-03-17/BidAction.xsd">http://www.caiso.com/soa/2006-03-17/BidAction.xsd</a> |  |
|-------------------|--------|---|--|
| Class             | Action | Attribute   | Values                                 |
| ActionRequest     | New    | ActionName  | Currently CANCEL only valid selection. |

| Updated Namespace |  | <a href="http://www.caiso.com/soa/2006-06-23/CleanBidSet.xsd">http://www.caiso.com/soa/2006-06-23/CleanBidSet.xsd</a> |
|-------------------|--|---|
|                   |  |   |

| Class                       | Action   | Attribute                | Values  |
|-----------------------------|----------|--------------------------|---|
| InterTieBid                 | Deleted  | marketSepFlag            |   |
| UnitSchedule                | Modified | UnitSchedParamType       | Deleted<br>MIN_ECONOMIC_MW &<br>MAX_ECONOMIC_MW from<br>the choice list   |
| MarketProduct               | Modified | selfSchedType            | Added IFM & RUC to the<br>choice list and deleted GT<br>from the choice list.   |
| GeneratingBid (ResourceBid) | Added    | createdISO               | YesNo   |
| InterTieBid (ResourceBid)   | Added    | createdISO               | YesNo   |
| LoadBid (ResourceBid)       | Added    | createdISO               | YesNo   |
| GeneratingBid               | Added    | pumpShutDownCost         |   |
| InterTieBid                 | Added    | minHourlyBlock           |   |
| GeneratingBid (ResourceBid) | Modified | bidStatus                | Modified the choice list<br>values to match SIBR<br>expected without<br>transformation.   |
| InterTieBid (ResourceBid)   | Modified | bidStatus                | Modified the choice list<br>values to match SIBR<br>expected without<br>transformation.   |
| LoadBid (ResourceBid)       | Modified | bidStatus                | Modified the choice list<br>values to match SIBR<br>expected without<br>transformation.   |
| InterTieBid (ResourceBid)   | Deleted  | exportImport             |   |
| UnitSchedule                | Modified | UnitSchedParamType       | Deleted BASE_MW from the<br>choice list   |
| LoadBid                     | Deleted  | minLoadReductionCost     |   |
| LoadBid                     | Deleted  | loadRedInitiationTime    |   |
| LoadBid                     | Deleted  | loadRedInitiationCost    |   |
| LoadBid                     | Deleted  | RampRateCurve            | The RampRateCurve was<br>contained within the LoadBid<br>class. By deleting this class,<br>the associated hierarchy<br>below RampRateCurve was<br>also deleted. |
| LoadBid                     | Deleted  | minLoad                  |   |
| LoadBid                     | Deleted  | minLoadReduction         |   |
| LoadBid                     | Deleted  | minLoadReductionInterval |   |

| Updated Namespace           |          | <a href="http://www.caiso.com/soa/2006-06-23/CleanBidSet.xsd">http://www.caiso.com/soa/2006-06-23/CleanBidSet.xsd</a> |   |
|-----------------------------|----------|---|---|
| Class                       | Action   | Attribute   | Values  |
| LoadBid                     | Deleted  | minTimeBetLoadReductions  |   |
| MarketProduct               | Modified | selfSchedType   | Added RA to the choice list.                                |
| BidSchedule                 | Deleted  | mitigationStatus  |   |
| CurveScheduleData           | Deleted  | prohibitedZone  | Previously was only visible in the RampRateCurve hierarchy. |
| ContractRight               | Modified | contractMW  | Moved to native XML datatype.                               |
| BidSelfSched                | Modified | selfSchedMw   | Moved to native XML datatype.                               |
| PnodeDistributionFactor     | Modified | factor  | Moved to native XML datatype.                               |
| PnodeDistributionFactor     | Modified | podLossFactor   | Moved to native XML datatype.                               |
| GeneratingBid (ResourceBid) | Modified | energyMaxDay  | Moved to native XML datatype.                               |
| GeneratingBid (ResourceBid) | Modified | energyMinDay  | Moved to native XML datatype.                               |
| GeneratingBid (ResourceBid) | Modified | minDispatchTime   | Moved to native XML datatype.                               |
| GeneratingBid               | Modified | maximumEconomicMW   | Moved to native XML datatype                                |
| GeneratingBid               | Modified | minimumEconomicMW   | Moved to native XML datatype                                |
| GeneratingBid               | Modified | noLoadCost  | Moved to native XML datatype                                |
| GeneratingBid               | Modified | pumpingCost   | Moved to native XML datatype                                |
| GeneratingBid               | Modified | pumpShutDownCost  | Moved to native XML datatype                                |

| Updated Namespace |          | <a href="http://www.caiso.com/soa/2006-06-23/Bid Results.xsd">http://www.caiso.com/soa/2006-06-23/Bid Results.xsd</a> |  |
|-------------------|----------|---|--|
| Class             | Action   | Attribute   | Values   |
| UnitSchedule      | Modified | UnitSchedParamType  | Deleted MIN_ECONOMIC_MW & MAX_ECONOMIC_MW from the choice list |

| Updated Namespace           |          | <a href="http://www.caiso.com/soa/2006-06-23/Bid%20Results.xsd">http://www.caiso.com/soa/2006-06-23/Bid Results.xsd</a> |  |
|-----------------------------|----------|---|--|
| Class                       | Action   | Attribute   | Values   |
| MarketProduct               | Modified | selfSchedType   | Added IFM & RUC to the choice list and deleted GT from the choice list.  |
| InterTieBid                 | Added    | ContingencyAvail  | YesNo  |
| GeneratingBid (ResourceBid) | Added    | createdISO  | YesNo  |
| InterTieBid (ResourceBid)   | Added    | createdISO  | YesNo  |
| LoadBid (ResourceBid)       | Added    | createdISO  | YesNo  |
| GeneratingBid               | Added    | pumpShutDownCost  |  |
| InterTieBid                 | Added    | minHourlyBlock  |  |
| BidError                    | Deleted  | errNumber   |  |
| BidError                    | Added    | errPriority   |  |
| N/A                         | Modified | N/A   | Modified the multiplicity on the Bids to have each type as optional.   |
| GeneratingBid (ResourceBid) | Modified | bidStatus   | Modified the choice list values to match SIBR expected without transformation.   |
| InterTieBid (ResourceBid)   | Modified | bidStatus   | Modified the choice list values to match SIBR expected without transformation.   |
| LoadBid (ResourceBid)       | Modified | bidStatus   | Modified the choice list values to match SIBR expected without transformation.   |
| InterTieBid (ResourceBid)   | Deleted  | exportImport  |  |
| UnitSchedule                | Modified | UnitSchedParamType  | Deleted BASE_MW from the choice list   |
| LoadBid                     | Deleted  | minLoadReductionCost  |  |
| LoadBid                     | Deleted  | loadRedInitiationTime   |  |
| LoadBid                     | Deleted  | loadRedInitiationCost   |  |
| LoadBid                     | Deleted  | RampRateCurve   | The RampRateCurve was contained within the LoadBid class. By deleting this class, the associated hierarchy below RampRateCurve was also deleted. |

| Updated Namespace           |          | <a href="http://www.caiso.com/soa/2006-06-23/Bid%20Results.xsd">http://www.caiso.com/soa/2006-06-23/Bid Results.xsd</a> |   |
|-----------------------------|----------|---|---|
| Class                       | Action   | Attribute   | Values  |
| LoadBid                     | Deleted  | minLoad   |   |
| LoadBid                     | Deleted  | minLoadReduction  |   |
| LoadBid                     | Deleted  | minLoadReductionInterval  |   |
| LoadBid                     | Deleted  | minTimeBetLoadReductions  |   |
| MarketProduct               | Modified | selfSchedType   | Added RA to the choice list.                                |
| BidSchedule                 | Deleted  | mitigationStatus  |   |
| CurveScheduleData           | Deleted  | prohibitedZone  | Previously was only visible in the RampRateCurve hierarchy. |
| ContractRight               | Modified | contractMW  | Moved to native XML datatype.                               |
| BidSelfSched                | Modified | selfSchedMw   | Moved to native XML datatype.                               |
| PnodeDistributionFactor     | Modified | factor  | Moved to native XML datatype.                               |
| PnodeDistributionFactor     | Modified | podLossFactor   | Moved to native XML datatype.                               |
| GeneratingBid (ResourceBid) | Modified | energyMaxDay  | Moved to native XML datatype.                               |
| GeneratingBid (ResourceBid) | Modified | energyMinDay  | Moved to native XML datatype.                               |
| GeneratingBid (ResourceBid) | Modified | minDispatchTime   | Moved to native XML datatype.                               |
| GeneratingBid               | Modified | maximumEconomicMW   | Moved to native XML datatype                                |
| GeneratingBid               | Modified | minimumEconomicMW   | Moved to native XML datatype                                |
| GeneratingBid               | Modified | noLoadCost  | Moved to native XML datatype                                |
| GeneratingBid               | Modified | pumpingCost   | Moved to native XML datatype                                |
| GeneratingBid               | Modified | pumpShutDownCost  | Moved to native XML datatype                                |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2006-12-08/BidResult.xsd">http://www.caiso.com/soa/2006-12-08/BidResult.xsd</a>   |
|---|---|
| Xpath   | Action  |
| InterTieBid/energyTransID                                   | Deleted attribute   |
| InterTieBid/wheelingCounterResource                         | Deleted attribute   |
| InterTieBid/ProductBid/mrid                                 | Inserted attribute as optional  |
| InterTieBid/ProductBid/MarketProduct/marketProductType      | Choice list modified.<br>Added Load Following Up and Load Following Down as product type choices  |
| InterTieBid/ProductBid/MarketProduct/selfSchedType          | Choice list modified.<br>Deleted RMR, RGMR, ORFC, IFM, and RUC as self schedule type choices.<br>Added BAS (Base Load), LOF (Load Following), and WHL (Wheeling) as self schedule type choices.   |
| InterTieBid/ProductBid/BidSelfSched/balancingFlag           | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour. It indicates whether a self-schedule is balanced with another self-schedule.   |
| InterTieBid/ProductBid/BidSelfSched/priorityFlag            | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM   |
| InterTieBid/ProductBid/BidSelfSched/wheelingCounterResource | Added attribute.<br>The opposite resource for a wheeling transaction. This attribute was placed in the BidSelfSched class to allow the value to be modified over the duration of the bid versus remain constant over the bid time horizon.                  |
| InterTieBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd | Added attribute.<br>Indication that there is a wheeling transaction that is self scheduled associated with this bid.  |
| InterTieBid/ProductBid/BidSelfSched/referenceType           | Added attribute.<br>Indication of which class is referenced by the self schedule. The choices are ETC (Contract Right), TOR (Contract Right), an ACA (Adjacent Control Area), or ECA (Host Control Area) WHL (Wheeling Reference) and RMT (Contract Right). |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2006-12-08/BidResult.xsd">http://www.caiso.com/soa/2006-12-08/BidResult.xsd</a>  |
|--|--|
| Xpath  | Action   |
| InterTieBid/ProductBid/BidSelfSched/pumpSelfSchedMw      | Added attribute.<br>Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null for a given time period, then the unit is in pumping mode.   |
| InterTieBid/ProductBid/BidSelfSched/AdjacentCASet/mrid   | Reference Class added. Added attribute. Used for a reference on the self schedule.   |
| InterTieBid/ProductBid/BidSelfSched/HostControlArea/mrid | Reference Class added. Added attribute. Used for a reference on the self schedule.   |
| InterTieBid/ProductBid/UnitSchedule/parameterID          | Choice list modified.<br>Added NERC_TAG and SCHEDULING_POINT to provide information that is modifiable over the time horizon of the bid versus constant throughout the time horizon of the bid.  |
| InterTieBid/ProductBid/UnitSchedule/parameterStringValue | Attribute modified.<br>Changed the data type from a Yes/No choice list to a String enabling the NERC_TAG and SCHEDULING_POINT information to be provided.  |
| InterTieBid/RampRateCurve/constraintRampType             | Added attribute (Optional).<br>The condition that identifies whether a Generating Resource should be constrained from Ancillary Service provision if its Schedule or Dispatch change across Trading Hours or Trading Intervals requires more than a specified fraction of the duration of the Trading Hour or Trading Interval. Valid values are Fast/Slow |
| GeneratingBid/energyTransID                              | Deleted attribute  |
| GeneratingBid/ProductBid/mrid                            | Inserted attribute as optional   |
| GeneratingBid/ProductBid/MarketProduct/marketProductType | Choice list modified.<br>Added Load Following Up and Load Following Down as product type choices   |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType     | Choice list modified.<br>Deleted RMR, RGMR, ORFC, IFM, and RUC as self schedule type choices.<br>Added BAS (Base Load), LOF (Load Following), and WHL (Wheeling) as self schedule type choices.  |
| GeneratingBid/ProductBid/BidSelfSched/balancingFlag      | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour. It indicates whether a self-schedule is balanced with another self-schedule.  |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2006-12-08/BidResult.xsd">http://www.caiso.com/soa/2006-12-08/BidResult.xsd</a>   |
|---|---|
| Xpath   | Action  |
| GeneratingBid/ProductBid/BidSelfSched/priorityFlag                | <p>Added attribute.</p> <p>This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM</p>                          |
| GeneratingBid/ProductBid/BidSelfSched/wheelingCo unterResource    | <p>Added attribute.</p> <p>The opposite resource for a wheeling transaction. This attribute was placed in the BidSelfSched class to allow the value to be modified over the duration of the bid versus remain constant over the bid time horizon.</p> |
| GeneratingBid/ProductBid/BidSelfSched/wheelingSelf ScheduleInd    | <p>Added attribute.</p> <p>Indication that there is a wheeling transaction that is self scheduled associated with this bid.</p>   |
| GeneratingBid/ProductBid/BidSelfSched/referenceTy pe              | <p>Added attribute.</p> <p>Indication of which class is referenced by the self schedule. The choices are ETC (Contract Right), TOR (Contract Right), an ACA (Adjacent Control Area), or ECA (Host Control Area).</p>                                  |
| GeneratingBid/ProductBid/BidSelfSched/pumpSelfSc hedMw            | <p>Added attribute.</p> <p>Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null for a given time period, then the unit is in pumping mode.</p>   |
| GeneratingBid/ProductBid/BidSelfSched/AdjacentCA Set/mrid         | Reference Class added. Added attribute. Used for a reference on the self schedule.  |
| GeneratingBid/ProductBid/BidSelfSched/HostControl Area/mrid       | Reference Class added. Added attribute. Used for a reference on the self schedule.  |
| GeneratingBid/ProductBid/UnitSchedule/parameterID                 | <p>Choice list modified.</p> <p>Added NERC_TAG and SCHEDULING_POINT to provide information that is modifiable over the time horizon of the bid versus constant throughout the time horizon of the bid.</p>  |
| GeneratingBid/ProductBid/UnitSchedule/parameterSt ringValue       | <p>Attribute modified.</p> <p>Changed the data type from a Yes/No choice list to a String enabling the NERC_TAG and SCHEDULING_POINT information to be provided.</p>  |
| GeneratingBid/ProductBid/BidDistributionFactor/description        | Added attribute.  |
| GeneratingBid/ProductBid/BidDistributionFactor/timel ntervalStart | Added attribute.  |
| GeneratingBid/ProductBid/BidDistributionFactor/timel ntervalEnd   | Added attribute.  |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2006-12-08/BidResult.xsd">http://www.caiso.com/soa/2006-12-08/BidResult.xsd</a>  |
|---|--|
| Xpath   | Action   |
| GeneratingBid/ProductBid/BidDistributionFactor/PnodeDistributionFactor/factor               | Added attribute.   |
| GeneratingBid/ProductBid/BidDistributionFactor/PnodeDistributionFactor/IndividualPnode/mrid | Added attribute.   |
| GeneratingBid/RampRateCurve/constraintRampType  | Added attribute (Optional).<br>The condition that identifies whether a Generating Resource should be constrained from Ancillary Service provision if its Schedule or Dispatch change across Trading Hours or Trading Intervals requires more than a specified fraction of the duration of the Trading Hour or Trading Interval. Valid values are Fast/Slow |
| LoadBid/ProductBid/mrid   | Inserted attribute as optional   |
| LoadBid/ProductBid/MarketProduct/marketProductType  | Choice list modified.<br>Added Load Following Up and Load Following Down as product type choices   |
| LoadBid/ProductBid/MarketProduct/selfSchedType  | Choice list modified.<br>Deleted RMR, RGMR, ORFC, IFM, and RUC as self schedule type choices.<br>Added BAS (Base Load), LOF (Load Following), and WHL (Wheeling) as self schedule type choices.  |
| LoadBid/ProductBid/BidSelfSched/balancingFlag   | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour. It indicates whether a self-schedule is balanced with another self-schedule.  |
| LoadBid/ProductBid/BidSelfSched/priorityFlag  | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM  |
| LoadBid/ProductBid/BidSelfSched/wheelingCounterResource                                     | Added attribute.<br>The opposite resource for a wheeling transaction. This attribute was placed in the BidSelfSched class to allow the value to be modified over the duration of the bid versus remain constant over the bid time horizon.   |
| LoadBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd                                     | Added attribute.<br>Indication that there is a wheeling transaction that is self scheduled associated with this bid.   |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2006-12-08/BidResult.xsd">http://www.caiso.com/soa/2006-12-08/BidResult.xsd</a>   |
|--|---|
| Xpath  | Action  |
| LoadBid/ProductBid/BidSelfSched/referenceType            | Added attribute.<br>Indication of which class is referenced by the self schedule. The choices are ETC (Contract Right), TOR (Contract Right), an ACA (Adjacent Control Area), or ECA (Host Control Area). |
| LoadBid/ProductBid/BidSelfSched/pumpSelfSchedM<br>w      | Added attribute.<br>Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null for a given time period, then the unit is in pumping mode.  |
| LoadBid/ProductBid/BidSelfSched/AdjacentCASet/mr<br>id   | Reference Class added. Added attribute. Used for a reference on the self schedule.  |
| LoadBid/ProductBid/BidSelfSched/HostControlArea/<br>mrid | Reference Class added. Added attribute. Used for a reference on the self schedule.  |
| LoadBid/ProductBid/UnitSchedule/parameterID              | Choice list modified.<br>Added NERC_TAG and SCHEDULING_POINT to provide information that is modifiable over the time horizon of the bid versus constant throughout the time horizon of the bid.           |
| LoadBid/ProductBid/UnitSchedule/parameterStringVa<br>lue | Attribute modified.<br>Changed the data type from a Yes/No choice list to a String enabling the NERC_TAG and SCHEDULING_POINT information to be provided.   |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd">http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd</a>  |
|--|--|
| Xpath  | Action   |
| InterTieBid/energyTransID                                  | Deleted attribute  |
| InterTieBid/minDispatchTime                                | Deleted attribute  |
| InterTieBid/wheelingCounterResource                        | Deleted attribute  |
| InterTieBid/ProductBid/MarketProduct/marketProduct<br>Type | Choice list modified.<br>Added Load Following Up and Load Following Down as product type choices   |
| InterTieBid/ProductBid/MarketProduct/selfSchedType         | Choice list modified.<br>Deleted RMR, RGMR, ORFC, and RUC as self schedule type choices.<br>Added BAS (Base Load), LOF (Load Following), and WHL (Wheeling) as self schedule type choices. |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd">http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd</a>  |
|---|--|
| Xpath   | Action   |
| InterTieBid/ProductBid/BidSelfSched/selfSchedMw             | Added modified.<br>Made the attribute optional.  |
| InterTieBid/ProductBid/BidSelfSched/balancingFlag           | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour. It indicates whether a self-schedule is balanced with another self-schedule.  |
| InterTieBid/ProductBid/BidSelfSched/priorityFlag            | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM                          |
| InterTieBid/ProductBid/BidSelfSched/wheelingCounterResource | Added attribute.<br>The opposite resource for a wheeling transaction. This attribute was placed in the BidSelfSched class to allow the value to be modified over the duration of the bid versus remain constant over the bid time horizon. |
| InterTieBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd | Added attribute.<br>Indication that there is a wheeling transaction that is self scheduled associated with this bid.   |
| InterTieBid/ProductBid/BidSelfSched/referenceType           | Added attribute.<br>Indication of which class is referenced by the self schedule. The choices are ETC (Contract Right), TOR (Contract Right), an ACA (Adjacent Control Area), or ECA (Host Control Area).                                  |
| InterTieBid/ProductBid/BidSelfSched/pumpSelfScheduleMw      | Added attribute.<br>Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null for a given time period, then the unit is in pumping mode.   |
| InterTieBid/ProductBid/BidSelfSched/AdjacentCASet/mrid      | Reference Class added. Added attribute. Used for a reference on the self schedule.   |
| InterTieBid/ProductBid/BidSelfSched/HostControlArea/mrid    | Reference Class added. Added attribute. Used for a reference on the self schedule.   |
| InterTieBid/ProductBid/UnitSchedule/parameterID             | Choice list modified.<br>Added NERC_TAG and SCHEDULING_POINT to provide information that is modifiable over the time horizon of the bid versus constant throughout the time horizon of the bid.  |
| InterTieBid/ProductBid/UnitSchedule/parameterType           | Attribute modified.<br>Went from Optional to Required.   |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd">http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd</a>   |
|---|---|
| Xpath   | Action  |
| InterTieBid/ProductBid/UnitSchedule/parameter/Value                                       | Attribute modified.<br>Went from Required to Optional.  |
| InterTieBid/ProductBid/UnitSchedule/parameterString/Value                                 | Attribute modified.<br>Changed the data type from a Yes/No choice list to a String enabling the NERC_TAG and SCHEDULING_POINT information to be provided.   |
| InterTieBid/ProductBid/BidDistributionFactor/timeIntervalStart                            | Added deleted.  |
| InterTieBid/ProductBid/BidDistributionFactor/timeIntervalEnd                              | Added deleted.  |
| InterTieBid/ProductBid/BidDistributionFactor/PnodeDistributionFactor/factor               | Added deleted.  |
| InterTieBid/ProductBid/BidDistributionFactor/PnodeDistributionFactor/IndividualPnode/mrid | Added deleted.  |
| GeneratingBid/energyTransID   | Deleted attribute   |
| GeneratingBid/ProductBid/MarketProduct/marketProductType                                  | Choice list modified.<br>Added Load Following Up and Load Following Down as product type choices  |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType                                      | Choice list modified.<br>Deleted RMR, RGMR, ORFC, and RUC as self schedule type choices.<br>Added BAS (Base Load), LOF (Load Following), and WHL (Wheeling) as self schedule type choices.                        |
| GeneratingBid/ProductBid/BidSelfSched/selfSchedMw   | Added modified.<br>Made the attribute optional.   |
| GeneratingBid/ProductBid/BidSelfSched/balancingFlag                                       | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour. It indicates whether a self-schedule is balanced with another self-schedule.                               |
| GeneratingBid/ProductBid/BidSelfSched/priorityFlag  | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd">http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd</a>   |
|---|---|
| Xpath   | Action  |
| GeneratingBid/ProductBid/BidSelfSched/wheelingCounterResource | <p>Added attribute.</p> <p>The opposite resource for a wheeling transaction. This attribute was placed in the BidSelfSched class to allow the value to be modified over the duration of the bid versus remain constant over the bid time horizon.</p> |
| GeneratingBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd | <p>Added attribute.</p> <p>Indication that there is a wheeling transaction that is self scheduled associated with this bid.</p>   |
| GeneratingBid/ProductBid/BidSelfSched/referenceType           | <p>Added attribute.</p> <p>Indication of which class is referenced by the self schedule. The choices are ETC (Contract Right), TOR (Contract Right), an ACA (Adjacent Control Area), or ECA (Host Control Area).</p>                                  |
| GeneratingBid/ProductBid/BidSelfSched/pumpSelfScheduledMw     | <p>Added attribute.</p> <p>Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null for a given time period, then the unit is in pumping mode.</p>   |
| GeneratingBid/ProductBid/BidSelfSched/AdjacentCASet/mrid      | Reference Class added. Added attribute. Used for a reference on the self schedule.  |
| GeneratingBid/ProductBid/BidSelfSched/HostControlArea/mrid    | Reference Class added. Added attribute. Used for a reference on the self schedule.  |
| GeneratingBid/ProductBid/UnitSchedule/parameterID             | <p>Choice list modified.</p> <p>Added NERC_TAG and SCHEDULING_POINT to provide information that is modifiable over the time horizon of the bid versus constant throughout the time horizon of the bid.</p>  |
| GeneratingBid/ProductBid/UnitSchedule/parameterType           | <p>Attribute modified.</p> <p>Went from Optional to Required.</p>   |
| GeneratingBid/ProductBid/UnitSchedule/parameterValue          | <p>Attribute modified.</p> <p>Went from Required to Optional.</p>   |
| GeneratingBid/ProductBid/UnitSchedule/parameterStringValue    | <p>Attribute modified.</p> <p>Changed the data type from a Yes/No choice list to a String enabling the NERC_TAG and SCHEDULING_POINT information to be provided.</p>  |
| LoadBid/ProductBid/MarketProduct/marketProductType            | <p>Choice list modified.</p> <p>Added Load Following Up and Load Following Down as product type choices</p>   |

| Updated Namespace                                       | <a href="http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd">http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd</a>  |
|---|--|
| Xpath   | Action   |
| LoadBid/ProductBid/MarketProduct/selfSchedType          | Choice list modified.<br>Deleted RMR, RGMR, ORFC, and RUC as self schedule type choices.<br>Added BAS (Base Load), LOF (Load Following), and WHL (Wheeling) as self schedule type choices.   |
| LoadBid/ProductBid/BidSelfSched/selfSchedMw             | Added modified.<br>Made the attribute optional.  |
| LoadBid/ProductBid/BidSelfSched/balancingFlag           | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour. It indicates whether a self-schedule is balanced with another self-schedule.  |
| LoadBid/ProductBid/BidSelfSched/priorityFlag            | Added attribute.<br>This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in IFM/RTM                          |
| LoadBid/ProductBid/BidSelfSched/wheelingCounterResource | Added attribute.<br>The opposite resource for a wheeling transaction. This attribute was placed in the BidSelfSched class to allow the value to be modified over the duration of the bid versus remain constant over the bid time horizon. |
| LoadBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd | Added attribute.<br>Indication that there is a wheeling transaction that is self scheduled associated with this bid.   |
| LoadBid/ProductBid/BidSelfSched/referenceType           | Added attribute.<br>Indication of which class is referenced by the self schedule. The choices are ETC (Contract Right), TOR (Contract Right), an ACA (Adjacent Control Area), or ECA (Host Control Area).                                  |
| LoadBid/ProductBid/BidSelfSched/pumpSelfSchedMw         | Added attribute.<br>Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null for a given time period, then the unit is in pumping mode.   |
| LoadBid/ProductBid/BidSelfSched/AdjacentCASet/mrid      | Reference Class added. Added attribute. Used for a reference on the self schedule.   |
| LoadBid/ProductBid/BidSelfSched/HostControlArea/mrid    | Reference Class added. Added attribute. Used for a reference on the self schedule.   |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd">http://www.caiso.com/soa/2006-12-08/CleanBidSet.xsd</a>   |
|---|---|
| Xpath   | Action  |
| LoadBid/ProductBid/UnitSchedule/parameterID   | Choice list modified.<br>Added NERC_TAG and SCHEDULING_POINT to provide information that is modifiable over the time horizon of the bid versus constant throughout the time horizon of the bid. |
| LoadBid/ProductBid/UnitSchedule/parameterType   | Attribute modified.<br>Went from Optional to Required.  |
| LoadBid/ProductBid/UnitSchedule/parameterValue  | Attribute modified.<br>Went from Required to Optional.  |
| LoadBid/ProductBid/UnitSchedule/parameterStringValue                                  | Attribute modified.<br>Changed the data type from a Yes/No choice list to a String enabling the NERC_TAG and SCHEDULING_POINT information to be provided.                                       |
| LoadBid/ProductBid/BidDistributionFactor/timeIntervalStart                            | Added deleted.  |
| LoadBid/ProductBid/BidDistributionFactor/timeIntervalEnd                              | Added deleted.  |
| LoadBid/ProductBid/BidDistributionFactor/PnodeDistributionFactor/factor               | Added deleted.  |
| LoadBid/ProductBid/BidDistributionFactor/PnodeDistributionFactor/IndividualPnode/mrid | Added deleted.  |

| Updated Namespace                                      | <a href="http://www.caiso.com/soa/2006-12-08/RawBidSet.xsd">http://www.caiso.com/soa/2006-12-08/RawBidSet.xsd</a>       |
|--|---|
| Xpath  | Action  |
| InterTieBid/energyTransID                              | Deleted attribute   |
| InterTieBid/wheelingCounterResource                    | Deleted attribute   |
| InterTieBid/ProductBid/MarketProduct/marketProductType | Choice list modified.<br>Added Load Following Up and Load Following Down as product type choices                        |
| InterTieBid/ProductBid/MarketProduct/selfSchedType     | Choice list modified.<br>Added BAS (Base Load), LOF (Load Following), and WHL (Wheeling) as self schedule type choices. |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2006-12-08/RawBidSet.xsd">http://www.caiso.com/soa/2006-12-08/RawBidSet.xsd</a>   |
|---|---|
| Xpath   | Action  |
| InterTieBid/ProductBid/BidSelfSched/wheelingCounterResource   | <p>Added attribute.</p> <p>The opposite resource for a wheeling transaction. This attribute was placed in the BidSelfSched class to allow the value to be modified over the duration of the bid versus remain constant over the bid time horizon.</p> |
| InterTieBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd   | <p>Added attribute.</p> <p>Indication that there is a wheeling transaction that is self scheduled associated with this bid.</p>   |
| InterTieBid/ProductBid/BidSelfSched/pumpSelfSchedMw           | <p>Added attribute.</p> <p>Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null for a given time period, then the unit is in pumping mode.</p>   |
| InterTieBid/ProductBid/UnitSchedule/parameterID               | <p>Choice list modified.</p> <p>Added NERC_TAG and SCHEDULING_POINT to provide information that is modifiable over the time horizon of the bid versus constant throughout the time horizon of the bid.</p>  |
| InterTieBid/ProductBid/UnitSchedule/parameterStringValue      | <p>Attribute modified.</p> <p>Changed the data type from a Yes/No choice list to a String enabling the NERC_TAG and SCHEDULING_POINT information to be provided.</p>  |
| GeneratingBid/energyTransID                                   | Deleted attribute   |
| GeneratingBid/ProductBid/MarketProduct/marketProductType      | <p>Choice list modified.</p> <p>Added Load Following Up and Load Following Down as product type choices</p>   |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType          | <p>Choice list modified.</p> <p>Added BAS (Base Load), LOF (Load Following), and WHL (Wheeling) as self schedule type choices.</p>  |
| GeneratingBid/ProductBid/BidSelfSched/wheelingCounterResource | <p>Added attribute.</p> <p>The opposite resource for a wheeling transaction. This attribute was placed in the BidSelfSched class to allow the value to be modified over the duration of the bid versus remain constant over the bid time horizon.</p> |
| GeneratingBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd | <p>Added attribute.</p> <p>Indication that there is a wheeling transaction that is self scheduled associated with this bid.</p>   |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2006-12-08/RawBidSet.xsd">http://www.caiso.com/soa/2006-12-08/RawBidSet.xsd</a>  |
|--|--|
| Xpath  | Action   |
| GeneratingBid/ProductBid/BidSelfSched/pumpSelfScheduleMw                                   | Added attribute.<br>Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null for a given time period, then the unit is in pumping mode.   |
| GeneratingBid/ProductBid/UnitSchedule/parameterID  | Choice list modified.<br>Added NERC_TAG and SCHEDULING_POINT to provide information that is modifiable over the time horizon of the bid versus constant throughout the time horizon of the bid.  |
| GeneratingBid/ProductBid/UnitSchedule/parameterStringValue                                 | Attribute modified.<br>Changed the data type from a Yes/No choice list to a String enabling the NERC_TAG and SCHEDULING_POINT information to be provided.  |
| GeneratingBid/ProductBid/BidDistributionFactor/timeIntervalStart                           | Added attribute.   |
| GeneratingBid/ProductBid/BidDistributionFactor/timeIntervalEnd                             | Added attribute.   |
| GeneratingBid/ProductBid/BidDistributionFactor/NodeDistributionFactor/factor               | Added attribute.   |
| GeneratingBid/ProductBid/BidDistributionFactor/NodeDistributionFactor/IndividualPnode/mrid | Added attribute.   |
| LoadBid/ProductBid/MarketProduct/marketProductType   | Choice list modified.<br>Added Load Following Up and Load Following Down as product type choices   |
| LoadBid/ProductBid/MarketProduct/selfSchedType   | Choice list modified.<br>Added BAS (Base Load), LOF (Load Following), and WHL (Wheeling) as self schedule type choices.  |
| LoadBid/ProductBid/BidSelfSched/wheelingCounterResource                                    | Added attribute.<br>The opposite resource for a wheeling transaction. This attribute was placed in the BidSelfSched class to allow the value to be modified over the duration of the bid versus remain constant over the bid time horizon. |
| LoadBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd                                    | Added attribute.<br>Indication that there is a wheeling transaction that is self scheduled associated with this bid.   |
| LoadBid/ProductBid/BidSelfSched/pumpSelfScheduleMw   | Added attribute.<br>Contains the PT, ETC, TOR pumping self schedule quantity. If this value is not null for a given time period, then the unit is in pumping mode.   |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2006-12-08/RawBidSet.xsd">http://www.caiso.com/soa/2006-12-08/RawBidSet.xsd</a>   |
|---|---|
| Xpath   | Action  |
| LoadBid/ProductBid/UnitSchedule/parameterID   | Choice list modified.<br>Added NERC_TAG and SCHEDULING_POINT to provide information that is modifiable over the time horizon of the bid versus constant throughout the time horizon of the bid. |
| LoadBid/ProductBid/UnitSchedule/parameterStringValue                                  | Attribute modified.<br>Changed the data type from a Yes/No choice list to a String enabling the NERC_TAG and SCHEDULING_POINT information to be provided.                                       |
| LoadBid/ProductBid/BidDistributionFactor/timeInterval/Start                           | Added attribute.  |
| LoadBid/ProductBid/BidDistributionFactor/timeInterval/End                             | Added attribute.  |
| LoadBid/ProductBid/BidDistributionFactor/PnodeDistributionFactor/factor               | Added attribute.  |
| LoadBid/ProductBid/BidDistributionFactor/PnodeDistributionFactor/IndividualPnode/mrid | Added attribute.  |

| Updated Namespace                           | <a href="http://www.caiso.com/soa/2006-11-29/RequestBidResults.xsd">http://www.caiso.com/soa/2006-11-29/RequestBidResults.xsd</a> |
|---|---|
| Xpath                                       | Action  |
| Bid_MarketTimeInterval/MarketStartTime      | Added attribute   |
| Bid_MarketTimeInterval/MarketEndTime        | Added attribute   |
| Bid_MarketTimeInterval/marketType           | Added attribute   |
| Bid_MarketTimeInterval/marketRunID          | Added attribute   |
| Bid_BidIDMarketTimeInterval/MarketStartTime | Modified attribute.<br>Renamed from START_TIME  |
| Bid_BidIDMarketTimeInterval/MarketEndTime   | Modified attribute.<br>Renamed from END_TIME  |
| Bid_BidIDMarketTimeInterval/marketType      | Modified attribute.<br>Renamed from MARKET_TYPE   |
| Bid_BidIDMarketTimeInterval/marketRunID     | Added attribute   |
| Bid_BidIDMarketTimeInterval/BidID           | Modified attribute.<br>Renamed from BID_ID.   |
| Bid_BidIDMarketTimeInterval/RESOURCE_ID     | Deleted attribute.  |

| Updated Namespace                                | <a href="http://www.caiso.com/soa/2006-11-29/RequestBidResults.xsd">http://www.caiso.com/soa/2006-11-29/RequestBidResults.xsd</a> |
|--|---|
| Xpath  | Action  |
| Bid_ResourceIDMarketTimeInterval/MarketStartTime | Added attribute   |
| Bid_ResourceIDMarketTimeInterval/MarketEndTime   | Added attribute   |
| Bid_ResourceIDMarketTimeInterval/marketType      | Added attribute   |
| Bid_ResourceIDMarketTimeInterval/marketRunID     | Added attribute   |
| Bid_ResourceIDMarketTimeInterval/ResourceID      | Added attribute   |

| Updated Namespace                           | <a href="http://www.caiso.com/soa/2006-11-17/RequestCleanBidSet.xsd">http://www.caiso.com/soa/2006-11-17/RequestCleanBidSet.xsd</a> |
|---|---|
| Xpath                                       | Action  |
| Bid_BidIDMarketTimeInterval/MarketStartTime | Modified attribute.<br>Made the attribute optional.   |
| Bid_BidIDMarketTimeInterval/MarketEndTime   | Modified attribute.<br>Made the attribute optional.   |
| Bid_BidIDMarketTimeInterval/MarketType      | Modified attribute.<br>Made the attribute optional.   |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2007-02-09/BidResults.xsd">http://www.caiso.com/soa/2007-02-09/BidResults.xsd</a>   |
|---|---|
| Xpath   | Action  |
| GeneratingBid, InterTieBid, & LoadBid.                              | Modified the order of the three high level categories to be alphabetical.<br><br>Previously, the order was InterTieBid, GeneratingBid, & LoadBid. The new order is GeneratingBid, InterTieBid, & LoadBid. |
| GeneratingBid/ProductBid/BidSelfSched/wheelingCo unterResource      | Attribute Deleted.  |
| GeneratingBid/ProductBid/BidSelfSched/wheelingTra nsactionReference | Attribute Added.<br><br>A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources   |
| GeneratingBid/ProductBid/BidSelfSched/wheelingSelf ScheduleInd      | Attribute Deleted.  |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2007-02-09/BidResults.xsd">http://www.caiso.com/soa/2007-02-09/BidResults.xsd</a>  |
|--|--|
| Xpath  | Action   |
| GeneratingBid/ProductBid/BidSelfSched/referenceType              | <p>Attribute Modified.</p> <p>Added WHL to the enumeration choice list resulting in the following choices:</p> <ul style="list-style-type: none"> <li>• ETC</li> <li>• TOR</li> <li>• ECA</li> <li>• ACA</li> <li>• WHL</li> </ul> |
| InterTieBid/ProductBid/BidSelfSched/wheelingCounterResource      | Attribute Deleted.   |
| InterTieBid/ProductBid/BidSelfSched/wheelingTransactionReference | <p>Attribute Added.</p> <p>A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources</p>   |
| InterTieBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd      | Attribute Deleted.   |
| InterTieBid/ProductBid/BidSelfSched/referenceType                | <p>Attribute Modified.</p> <p>Added WHL to the enumeration choice list resulting in the following choices:</p> <ul style="list-style-type: none"> <li>• ETC</li> <li>• TOR</li> <li>• ECA</li> <li>• ACA</li> <li>• WHL</li> </ul> |
| LoadBid/ProductBid/BidSelfSched/wheelingCounterResource          | Attribute Deleted.   |
| LoadBid/ProductBid/BidSelfSched/wheelingTransactionReference     | <p>Attribute Added.</p> <p>A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources</p>   |
| LoadBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd          | Attribute Deleted.   |
| LoadBid/ProductBid/BidSelfSched/referenceType                    | <p>Attribute Modified.</p> <p>Added WHL to the enumeration choice list resulting in the following choices:</p> <ul style="list-style-type: none"> <li>• ETC</li> <li>• TOR</li> <li>• ECA</li> <li>• ACA</li> <li>• WHL</li> </ul> |

| Updated Namespace                            | <a href="http://www.caiso.com/soa/2007-02-09/RequestBidResults.xsd">http://www.caiso.com/soa/2007-02-09/RequestBidResults.xsd</a> |
|--|---|
| Xpath  | Action  |
| Bid_MarketTimeInterval/marketRunID           | Attribute Deleted.  |
| Bid_BidIDMarketTimeInterval/MarketStartTime  | Attribute Deleted.  |
| Bid_BidIDMarketTimeInterval/MarketEndTime    | Attribute Deleted.  |
| Bid_BidIDMarketTimeInterval/marketType       | Attribute Deleted.  |
| Bid_BidIDMarketTimeInterval/marketRunID      | Attribute Deleted.  |
| Bid_ResourceIDMarketTimeInterval/marketRunID | Attribute Deleted.  |

| Updated Namespace                            | <a href="http://www.caiso.com/soa/2007-02-09/RequestCleanBidSet.xsd">http://www.caiso.com/soa/2007-02-09/RequestCleanBidSet.xsd</a> |
|--|---|
| Xpath  | Action  |
| Bid_MarketTimeInterval/marketRunID           | Attribute Deleted.  |
| Bid_BidIDMarketTimeInterval/MarketStartTime  | Attribute Deleted.  |
| Bid_BidIDMarketTimeInterval/MarketEndTime    | Attribute Deleted.  |
| Bid_BidIDMarketTimeInterval/marketType       | Attribute Deleted.  |
| Bid_BidIDMarketTimeInterval/marketRunID      | Attribute Deleted.  |
| Bid_ResourceIDMarketTimeInterval/marketRunID | Attribute Deleted.  |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2007-02-09/RawBidSet.xsd">http://www.caiso.com/soa/2007-02-09/RawBidSet.xsd</a>   |
|---|---|
| Xpath   | Action  |
| GeneratingBid, InterTieBid, & LoadBid.                        | Modified the order of the three high level categories to be alphabetical.<br><br>Previously, the order was InterTieBid, GeneratingBid, & LoadBid. The new order is GeneratingBid, InterTieBid, & LoadBid. |
| GeneratingBid/ProductBid/BidSelfSched/wheelingCounterResource | Attribute Deleted.  |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2007-02-09/RawBidSet.xsd">http://www.caiso.com/soa/2007-02-09/RawBidSet.xsd</a>   |
|--|---|
| Xpath  | Action  |
| GeneratingBid/ProductBid/BidSelfSched/wheelingTransactionReference | Attribute Added.<br>A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources |
| GeneratingBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd      | Attribute Deleted.  |
| InterTieBid/ProductBid/BidSelfSched/wheelingCounterResource        | Attribute Deleted.  |
| InterTieBid/ProductBid/BidSelfSched/wheelingTransactionReference   | Attribute Added.<br>A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources |
| InterTieBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd        | Attribute Deleted.  |
| LoadBid/ProductBid/BidSelfSched/wheelingCounterResource            | Attribute Deleted.  |
| LoadBid/ProductBid/BidSelfSched/wheelingTransactionReference       | Attribute Added.<br>A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources |
| LoadBid/ProductBid/BidSelfSched/wheelingSelfScheduleInd            | Attribute Deleted.  |

| Updated Namespace              | <a href="http://www.caiso.com/soa/2007-03-30/BidResult.xsd">http://www.caiso.com/soa/2007-03-30/BidResult.xsd</a> |
|--------------------------------|---|
| Xpath                          | Action  |
| GeneratingBid/pumpingCost      | Attribute Deleted.  |
| GeneratingBid/pumpShutDownCost | Attribute Deleted.  |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2007-03-30/BidResult.xsd">http://www.caiso.com/soa/2007-03-30/BidResult.xsd</a>  |
|--|--|
| Xpath  | Action   |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType       | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.<br/>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>   |
| GeneratingBid/ProductBid/BidSelfSched/selfSchedSptResource | <p>Attribute Added.</p> <p>PT Export Self Sched Support Resource</p>   |
| GeneratingBid/ProductBid/UnitSchedule/parameterID          | <p>Attribute Modified.</p> <p>Choice list modified to include PUMPING_COST AND PUMPING_SHUTDOWN_COST. Complete choices are:</p> <ul style="list-style-type: none"> <li>• HOURLY_PREDISPATCH</li> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |
| GeneratingBid/BidError/MarketProduct/selfSchedType         | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.<br/>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>   |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2007-03-30/BidResult.xsd">http://www.caiso.com/soa/2007-03-30/BidResult.xsd</a>  |
|--|--|
| Xpath  | Action   |
| InterTieBid/ProductBid/MarketProduct/selfSchedType       | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.<br/>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>   |
| InterTieBid/ProductBid/BidSelfSched/selfSchedSptResource | <p>Attribute Added.</p> <p>PT Export Self Sched Support Resource</p>   |
| InterTieBid/ProductBid/UnitSchedule/parameterID          | <p>Attribute Modified.</p> <p>Choice list modified to include PUMPING_COST AND PUMPING_SHUTDOWN_COST. Complete choices are:</p> <ul style="list-style-type: none"> <li>• HOURLY_PREDISPATCH</li> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |
| InterTieBid/BidError/MarketProduct/selfSchedType         | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.<br/>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>   |

| Updated Namespace                                    | <a href="http://www.caiso.com/soa/2007-03-30/BidResult.xsd">http://www.caiso.com/soa/2007-03-30/BidResult.xsd</a>  |
|--|--|
| Xpath  | Action   |
| LoadBid/ProductBid/MarketProduct/selfSchedType       | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.<br/>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>   |
| LoadBid/ProductBid/BidSelfSched/selfSchedSptResource | <p>Attribute Added.</p> <p>PT Export Self Sched Support Resource</p>   |
| LoadBid/ProductBid/UnitSchedule/parameterID          | <p>Attribute Modified.</p> <p>Choice list modified to include PUMPING_COST AND PUMPING_SHUTDOWN_COST. Complete choices are:</p> <ul style="list-style-type: none"> <li>• HOURLY_PREDISPATCH</li> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |
| LoadBid/BidError/MarketProduct/selfSchedType         | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.<br/>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>   |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2007-03-30/CleanBidSet.xsd">http://www.caiso.com/soa/2007-03-30/CleanBidSet.xsd</a>  |
|--|--|
| Xpath  | Action   |
| GeneratingBid/pumpingCost                                  | Attribute Deleted.   |
| GeneratingBid/pumpShutDownCost                             | Attribute Deleted.   |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType       | Attribute Modified.<br>Choice list modified to include LPT.<br>Complete choices are: <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• IFM</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>  |
| GeneratingBid/ProductBid/BidSelfSched/selfSchedSptResource | Attribute Added.<br>PT Export Self Sched Support Resource  |
| GeneratingBid/ProductBid/UnitSchedule/parameterID          | Attribute Modified.<br>Choice list modified to include<br>PUMPING_COST AND<br>PUMPING_SHUTDOWN_COST.<br>Complete choices are: <ul style="list-style-type: none"> <li>• HOURLY_PREDISPATCH</li> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |
| GeneratingBid/RampRateCurve/CurveSchedData/xAxisData       | Attribute Modified<br>Modified the minimum occurrences from 1 to 0 making the attribute optional.<br>The required attribute was introduced by mistake in the CR3B updates.   |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2007-03-30/CleanBidSet.xsd">http://www.caiso.com/soa/2007-03-30/CleanBidSet.xsd</a>   |
|--|---|
| Xpath  | Action  |
| InterTieBid/ProductBid/MarketProduct/selfSchedType       | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.</p> <p>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• IFM</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>                                  |
| InterTieBid/ProductBid/BidSelfSched/selfSchedSptResource | <p>Attribute Added.</p> <p>PT Export Self Sched Support Resource</p>  |
| InterTieBid/ProductBid/UnitSchedule/parameterID          | <p>Attribute Modified.</p> <p>Choice list modified to include PUMPING_COST AND PUMPING_SHUTDOWN_COST.</p> <p>Complete choices are:</p> <ul style="list-style-type: none"> <li>• HOURLY_PREDISPATCH</li> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |

| Updated Namespace                                    | <a href="http://www.caiso.com/soa/2007-03-30/CleanBidSet.xsd">http://www.caiso.com/soa/2007-03-30/CleanBidSet.xsd</a>   |
|--|---|
| Xpath  | Action  |
| LoadBid/ProductBid/MarketProduct/selfSchedType       | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.</p> <p>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• IFM</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>                                  |
| LoadBid/ProductBid/BidSelfSched/selfSchedSptResource | <p>Attribute Added.</p> <p>PT Export Self Sched Support Resource</p>  |
| LoadBid/ProductBid/UnitSchedule/parameterID          | <p>Attribute Modified.</p> <p>Choice list modified to include PUMPING_COST AND PUMPING_SHUTDOWN_COST.</p> <p>Complete choices are:</p> <ul style="list-style-type: none"> <li>• HOURLY_PREDISPATCH</li> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |

| Updated Namespace              | <a href="http://www.caiso.com/soa/2007-03-30/RawBidSet.xsd">http://www.caiso.com/soa/2007-03-30/RawBidSet.xsd</a> |
|--------------------------------|---|
| Xpath                          | Action  |
| GeneratingBid/pumpingCost      | Attribute Deleted.  |
| GeneratingBid/pumpShutDownCost | Attribute Deleted.  |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2007-03-30/RawBidSet.xsd">http://www.caiso.com/soa/2007-03-30/RawBidSet.xsd</a>   |
|--|---|
| Xpath  | Action  |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType       | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.</p> <p>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>   |
| GeneratingBid/ProductBid/BidSelfSched/selfSchedSptResource | <p>Attribute Added.</p> <p>PT Export Self Sched Support Resource</p>  |
| GeneratingBid/ProductBid/UnitSchedule/parameterID          | <p>Attribute Modified.</p> <p>Choice list modified to include PUMPING_COST AND PUMPING_SHUTDOWN_COST.</p> <p>Complete choices are:</p> <ul style="list-style-type: none"> <li>• HOURLY_PREDISPATCH</li> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |
| InterTieBid/ProductBid/MarketProduct/selfSchedType         | <p>Attribute Modified.</p> <p>Choice list modified to include LPT.</p> <p>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>   |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2007-03-30/RawBidSet.xsd">http://www.caiso.com/soa/2007-03-30/RawBidSet.xsd</a>  |
|--|--|
| Xpath  | Action   |
| InterTieBid/ProductBid/BidSelfSched/selfSchedSptResource | Attribute Added.<br>PT Export Self Sched Support Resource  |
| InterTieBid/ProductBid/UnitSchedule/parameterID          | Attribute Modified.<br>Choice list modified to include<br>PUMPING_COST AND<br>PUMPING_SHUTDOWN_COST.<br>Complete choices are: <ul style="list-style-type: none"> <li>• HOURLY_PREDISPATCH</li> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |
| LoadBid/ProductBid/MarketProduct/selfSchedType           | Attribute Modified.<br>Choice list modified to include LPT.<br>Complete choices are: <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>   |
| LoadBid/ProductBid/BidSelfSched/selfSchedSptResource     | Attribute Added.<br>PT Export Self Sched Support Resource  |
| LoadBid/ProductBid/UnitSchedule/parameterID              | Attribute Modified.<br>Choice list modified to include<br>PUMPING_COST AND<br>PUMPING_SHUTDOWN_COST.<br>Complete choices are: <ul style="list-style-type: none"> <li>• HOURLY_PREDISPATCH</li> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2008-08-09/RawBidSet.xsd">http://www.caiso.com/soa/2008-08-09/RawBidSet.xsd</a>   |
|--|---|
| Xpath  | Action  |
| ProductBid_G/ProductBid/BidSelfSched/BidSelfSched<br>ProductBid_L/ProductBid/BidSelfSched/BidSelfSched<br>ProductBid_I/ProductBid/BidSelfSched/BidSelfSched  | MaxOccurs extended to 1024.   |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType<br>LoadBid/ProductBid/MarketProduct/selfSchedType<br>InterTieBid/ProductBid/MarketProduct/selfSchedType | <p>Added ETP, TOP as SelfSchedTypes.<br/>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• ETP</li> <li>• TOR</li> <li>• TOP</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul>  |
| GeneratingBid/ProductBid/UnitSchedule/parameterID<br>LoadBid/ProductBid/UnitSchedule/parameterID<br>InterTieBid/ProductBid/UnitSchedule/parameterID          | <p>Removed Hourly Pre-Dispatch parameter from UnitSchedule parameter ID<br/>This is no longer required for bid submission. It will be returned in either a BidResult or CleanBid with the registered value from MF.</p> <p>Complete choices are:</p> <ul style="list-style-type: none"> <li>• PUMPING_LEVEL</li> <li>• NERC_TAG</li> <li>• SCHEDULING_POINT</li> <li>• PUMPING_COST</li> <li>• PUMPING_SHUTDOWN_COST</li> </ul> |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2008-05-21/RequestBidResults.xsd">http://www.caiso.com/soa/2008-05-21/RequestBidResults.xsd</a> |  |
|---|---|--|
| Xpath   | Action  |  |
| Bid_SchedulingCoordinatorMarketTimeInterval<br><br>Includes:<br>MarketStartTime<br>MarketEndTime<br>MarketType<br>schedulingCoordinator | Attribute Added to provide another option for Requests.   |  |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2008-08-09/BidResults.xsd">http://www.caiso.com/soa/2008-08-09/BidResults.xsd</a>   |  |
|--|---|--|
| Xpath  | Action  |  |
| ProductBid_G<br>ProductBid_I<br>ProductBid_L   | MinOccurs set to =0.<br>If there was an Empty Bid, it can now be returned with the BidResults, previously it was failing xml validation.  |  |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType<br>LoadBid/ProductBid/MarketProduct/selfSchedType<br>InterTieBid/ProductBid/MarketProduct/selfSchedType | Added ETP, TOP as SelfSchedTypes.<br>Complete choices are: <ul style="list-style-type: none"><li>• PT</li><li>• ETC</li><li>• ETP</li><li>• TOR</li><li>• TOP</li><li>• RMT</li><li>• SP</li><li>• RA</li><li>• BAS</li><li>• LOF</li><li>• WHL</li><li>• LPT</li></ul> |  |

| Updated Namespace   | <a href="http://www.caiso.com/soa/2008-05-21/RequestCleanBidSet.xsd">http://www.caiso.com/soa/2008-05-21/RequestCleanBidSet.xsd</a> |  |
|---|---|--|
| Xpath   | Action  |  |
| Bid_SchedulingCoordinatorMarketTimeInterval<br><br>Includes:<br>MarketStartTime<br>MarketEndTime<br>MarketType<br>schedulingCoordinator | Attribute Added to provide another option for Requests.   |  |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2008-08-09/CleanBidSet.xsd">http://www.caiso.com/soa/2008-08-09/CleanBidSet.xsd</a>  |  |
|--|--|--|
| Xpath  | Action   |  |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType<br>LoadBid/ProductBid/MarketProduct/selfSchedType<br>InterTieBid/ProductBid/MarketProduct/selfSchedType | Added ETP, TOP as SelfSchedTypes.<br>Complete choices are: <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• ETP</li> <li>• TOR</li> <li>• TOP</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul> |  |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2008-08-10/RawBidSet.xsd">http://www.caiso.com/soa/2008-08-10/RawBidSet.xsd</a>   |  |
|--|---|--|
| Xpath  | Action  |  |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType<br>LoadBid/ProductBid/MarketProduct/selfSchedType<br>InterTieBid/ProductBid/MarketProduct/selfSchedType | Removed ETP, TOP as SelfSchedTypes.<br>Complete choices are:<br><ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul> |  |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2008-08-10/BidResults.xsd">http://www.caiso.com/soa/2008-08-10/BidResults.xsd</a>   |  |
|--|---|--|
| Xpath  | Action  |  |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType<br>LoadBid/ProductBid/MarketProduct/selfSchedType<br>InterTieBid/ProductBid/MarketProduct/selfSchedType | Removed ETP, TOP as SelfSchedTypes.<br>Complete choices are:<br><ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul> |  |

| Updated Namespace  | <a href="http://www.caiso.com/soa/2008-08-10/CleanBidSet.xsd">http://www.caiso.com/soa/2008-08-10/CleanBidSet.xsd</a> |   |
|--|---|---|
| Xpath  | Action  |   |
| GeneratingBid/ProductBid/MarketProduct/selfSchedType<br>LoadBid/ProductBid/MarketProduct/selfSchedType<br>InterTieBid/ProductBid/MarketProduct/selfSchedType | Removed ETP, TOP as SelfSchedTypes.<br>Complete choices are:  | <ul style="list-style-type: none"> <li>• PT</li> <li>• ETC</li> <li>• TOR</li> <li>• RMT</li> <li>• SP</li> <li>• RA</li> <li>• BAS</li> <li>• LOF</li> <li>• WHL</li> <li>• LPT</li> </ul> |

| Updated Namespace | <a href="http://www.caiso.com/soa/2008-08-11/BidResults.xsd">http://www.caiso.com/soa/2008-08-11/BidResults.xsd</a> |   |
|-------------------|---|---|
| Xpath             | Action  |   |
| bidStatus         | Added Bid Status:   | <ul style="list-style-type: none"> <li>• S</li> <li>• SO</li> </ul> |

| Updated Namespace | <a href="http://www.caiso.com/soa/2008-08-11/CleanBidSet.xsd">http://www.caiso.com/soa/2008-08-11/CleanBidSet.xsd</a> |  |
|-------------------|---|--|
| Xpath             | Action  |  |
| bidStatus         | Cleaned up Bid Status (removed all except:)   | <ul style="list-style-type: none"> <li>• CL</li> </ul> |