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Electric Industry Data Exchange Adapter (EIDE) Interface Specification

Version: 1.03
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Revision History

Date	Version	Description
10/01/2018	1.0	Initial document release related to the EIDE adapter <ul style="list-style-type: none"> • Load Forecast • Generation Forecast • Contingency Reserve Forecast at Generator Level • Regulation Reserve Forecast at Generator Level
1/2/2019	1.01	Update reply code for standard output and fault output
1/8/2019	1.02	Changed the end time for load forecast MW amount to be mandatory and added the response message for this validation error
5/15/2019	1.03	<ul style="list-style-type: none"> • Updates IRO reference sync up with latest CAISO IRO documentation • Updates the 3.2 to include submission of data at a BA level and Reserve Sharing Group level. • Update IRO 3.5 and 3.8 start time / end time logic



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1 Introduction

1.1 Purpose

This document describes submit and response XSDs related to the Electric Industry Data Exchange Adapter (EIDE) Interface.

1.2 Related Documents

For more information on current or past project initiative releases, please refer to the release planning page at <http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx> .


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2 Document Release Notes

2.1 *Version 1.0.x*

This document release version affects the following system data interface specifications:

#		Service	Schema	Version #	
				Major	Minor
1	new	PutSchedule_RC_AP	EIDE_v1.xsd	1	v20190401

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3 Submit Load Forecast – IRO 3.3, 3.4

3.1 Operation Details

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


Refer to Section 3.2.2 for time data logic on data horizon window.

Operation	Message Types	Message	WSDL	XSD
PutSchedule	Input	PutSchedule	EIDEService.wsdl	EIDE_v1.xsd
	Output	PutScheduleResponse		EIDE_v1.xsd
	Fault	faultReturntype		EIDE_v1.xsd

3.2 BA Entity Load Forecast

3.2.1 Element Table

Element	Data Description	Type	Req'd
Message Info			
SysGenID	Application level relevant time and date for when this instance of the message was produced.	Number	No
TimeStamp	Application level relevant time and date for when this instance of the message was produced.	dateTime	Yes
Sender	Short name of sending BA party: ex: 'CISO'	String	No
Receiver	Short name of RC: 'CISO'	String	No
EntityCode	Short name of BA of the data being submitted: 'CISO'	String	No
ProcessID	Process ID of data process: default 0	Number	No
DataSet	Data Set ID of the data: default 0	Number	No
ListID	List ID of the data set: default 0	Number	No
ResponseSysGenID	Response System Gen ID related to response: default 0	Number	No
RequireAck	'false/true'	String	No
AsyncReplyFlag	'false/true'	String	No
Schedule			

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Element	Data Description	Type	Req'd
Schedule/ ScheduleDescription/ StartTime	Start Time of the set of load forecast data being submitted	dateTime	Yes
Schedule/ ScheduleDescription/ EndTime	End Time of the set of load forecast data being submitted	dateTime	Yes
Schedule/ ScheduleDescription/ AccountCode	Account Code referencing the EIDE Submission '[ForecastZone].LoadForecast' Note: for load forecast this element must read '[ForecastZone].LoadForecast', the submitting entity will be referenced from the certificate. The forecast zone is an aggregate node representing the load of the BA, which will be provided by CAISO RC	String	Yes
Schedule/ Quantities/ Quantity/ Value	The BA area defined load forecast zone load quantity for the specific time interval provided in MW	Number	Yes
Schedule/ Quantities/ Quantity/ StartTime	The start time related to the load forecast MW amount Note: the submit user is expected to provide the data at an hourly break point interval, the system will not break the data down. For example, if a user is intending to submit 5 Hours of flat load forecast, we would expect 5 different break points with the same MW value broken up at the hour boundary level	dateTime	Yes
Schedule/ Quantities/ Quantity/ EndTime	The end time related to the load forecast MW amount Note: the submit user is expected to provide the data at an hourly break point interval, the system will not break the data down. For example, if a user is intending to submit 5 Hours of flat load forecast, we would expect 5 different break points with the same MW value broken up at the hour boundary level	dateTime	Yes

3.2.2 Data Logic

The system will limit the submitted forecast to 10 minutes before the binding hour up to a 192 hour time horizon; data submitted less than the 10 minute horizon will not be stored or used in any downstream systems needing forecast, data submitted after the 192 hour time horizon will not be stored or used.

Ex:

Current time 04/01/2017 00:14:30

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User can submit forecast from 04/01/2017 01:00:00 till 04/06/2017 02:00:00.

4 Submit Generation Forecast – IRO 3.5, 3.8

4.1 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
PutSchedule	Input	PutSchedule	EIDEService.wsdl	EIDE_v1.xsd
	Output	PutScheduleResponse		EIDE_v1.xsd
	Fault	faultReturntype		EIDE_v1.xsd


4.2 BA Entity Generation Forecast

4.2.1 Element Table


Element	Data Description	Type	Req'd
Message Info			
SysGenID	Application level relevant time and date for when this instance of the message was produced.	Number	No
TimeStamp	Application level relevant time and date for when this instance of the message was produced.	dateTime	Yes
Sender	Short name of sending BA party: ex: 'CISO'	String	No
Receiver	Short name of RC: 'CISO'	String	No
EntityCode	Short name of BA of the data being submitted: 'CISO'	String	No
ProcessID	Process ID of data process: default 0	Number	No
DataSet	Data Set ID of the data: default 0	Number	No
ListID	List ID of the data set: default 0	Number	No
ResponseSysGenID	Response System Gen ID related to response: default 0	Number	No
RequireAck	'false/true'	String	No
AsyncReplyFlag	'false/true'	String	No
Schedule			

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Element	Data Description	Type	Req'd
Schedule/ ScheduleDescription/ StartTime	<p>Start Time of the set of generation forecast data being submitted</p> <p>3.5 the start time should always be the start interval of the day of the schedule For example for 5/1 the startTime should be 5/1 07:00</p> <p>3.8 the start time should be the start interval of the schedule For example for a schedule submitted for hour ending 2 of 5/1 the startTime should be 5/1 08:00</p>	dateTime	Yes
Schedule/ ScheduleDescription/ EndTime	<p>End Time of the set of generation forecast data being submitted</p> <p>3.5 the end time should always be the end of the last interval of the day of the schedule For example for 5/1 the endTime should be 5/2 07:00</p> <p>3.8 the start time should be the end interval of the schedule For example for a schedule submitted for hour ending 2 of 5/1 the endTime should be 5/1 09:00</p>	dateTime	Yes
Schedule/ ScheduleDescription/ AccountCode	<p>Account Code referencing the EIDE Submission</p> <p>IRO 3.7 AccountCode="DA."+RCBASchedulingEntity +"."+CAISORCRegisteredResourceName+".BaseMW" ex: DA.CISO.CAISO_UNIT 1.BaseMW</p> <p>IRO3.8 AccountCode="RT." +RCBASchedulingEntity +"."+CAISORCRegisteredResourceName+".BaseMW" ex: RT.CISO.CAISO_UNIT 1.BaseMW</p>	String	Yes
Schedule/ Quantities/ Quantity/ Value	The registered generator defined forecast quantity for the specific time interval provided in MW	Number	Yes

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Element	Data Description	Type	Req'd
Schedule/ Quantities/ Quantity/ StartTime	<p>The start time related to the generation forecast MW amount</p> <p>Note: the submit user is expected to provide the data at an hourly break point interval, the system will not break the data down. For example, if a user is intending to submit 5 Hours of flat generation forecast, we would expect 5 different break points with the same MW value broken up at the hour boundary level</p> <p>Example for 3.5 if the submitting for 5/1 the startTime quantity should be for</p> <p>5/1 07:00 5/1 08:00 5/1 09:00 5/1 10:00 And so till end of day</p> <p>Example for 3.8 if submitted for 5/1 hour ending 2 startTime quantity should e for</p> <p>5/1 08:00</p>	dateTime	Yes

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Element	Data Description	Type	Req'd
Schedule/ Quantities/ Quantity/ EndTime	<p>The end time related to the generation forecast MW amount</p> <p>Note: the submit user is expected to provide the data at an hourly break point interval, the system will not break the data down. For example, if a user is intending to submit 5 Hours of flat generation forecast, we would expect 5 different break points with the same MW value broken up at the hour boundary level</p> <p>Example for 3.5 if the submitting for 5/1 the endTime quantity should be for</p> <p>5/1 08:00 5/1 09:00 5/1 10:00 5/1 11:00 And so till end of day</p> <p>Example for 3.8 if submitted for 5/1 hour ending 2 endTime quantity should e for</p> <p>5/1 09:00</p>	dateTime	No

4.2.2 Time Submit

The generation forecast submit expects that the participants submit according to the IRO data requirements.

IRO 3.7 the data should be submitted in an hourly interval for at least 4 calendar days, 1 day per submission for up to 9 calendar days.


IRO 3.8 the data should be submitted in an hourly interval for at least 4 hours, for up to 9 calendar days.

Schedules can be submitted up to 5 minutes before binding hour.

5 Submit Generation Contingency Reserve Requirement – IRO 3.2a

5.1 Operation Details

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


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Operation	Message Types	Message	WSDL	XSD
PutSchedule	Input	PutSchedule	EIDEService.wsdl	EIDE_v1.xsd
	Output	PutScheduleResponse		EIDE_v1.xsd
	Fault	faultReturnTypes		EIDE_v1.xsd

5.2 BA Entity Generation Contingency Reserve

5.2.1 Element Table

Element	Data Description	Type	Req'd
Message Info			
SysGenID	Application level relevant time and date for when this instance of the message was produced.	Number	No
TimeStamp	Application level relevant time and date for when this instance of the message was produced.	dateTime	Yes
Sender	Short name of sending BA party: ex: 'CISO'	String	No
Receiver	Short name of RC: 'CISO'	String	No
EntityCode	Short name of BA of the data being submitted: 'CISO'	String	No
ProcessID	Process ID of data process: default 0	Number	No
DataSet	Data Set ID of the data: default 0	Number	No
ListID	List ID of the data set: default 0	Number	No
ResponseSysGenID	Response System Gen ID related to response: default 0	Number	No
RequireAck	'false/true'	String	No
AsyncReplyFlag	'false/true'	String	No
Schedule			
Schedule/ ScheduleDescription/ StartTime	Start Time of the set of generation forecast data being submitted	dateTime	Yes
Schedule/ ScheduleDescription/ EndTime	End Time of the set of generation forecast data being submitted	dateTime	Yes


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Element	Data Description	Type	Req'd
Schedule/ ScheduleDescription/ AccountCode	Account Code referencing the EIDE Submission AccountCode= "ContingencyReserve.Requirement."+BAA ex: ContingencyReserve.Requirement.CISO Note: this is the total reserve requirement amount per BAA	String	Yes
Schedule/ Quantities/ Quantity/ Value	The defined quantity for the account code for the specific time interval provided in MW	Number	Yes
Schedule/ Quantities/ Quantity/ StartTime	The start time related to the Contingency Reserve MW Requirement Note: the submit user is expected to provide the data at an hourly break point interval, the system will not break the data down. For example, if a user is intending to submit 5 Hours of flat contingency amount, we would expect 5 different break points with the same MW value broken up at the hour boundary level	dateTime	Yes
Schedule/ Quantities/ Quantity/ EndTime	The end time related to the Contingency Reserve MW Requirement Note: the submit user is expected to provide the data at an hourly break point interval, the system will not break the data down. For example, if a user is intending to submit 5 Hours of flat contingency amount, we would expect 5 different break points with the same MW value broken up at the hour boundary level	dateTime	No

5.2.2 Time Submit

The generation forecast submit expects that the participants submit according to the IRO data requirements.

IRO 3.2 the data should be submitted in an hourly interval for at least 1 calendar days, for up to 7 calendar days.

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5.2.3 Account Codes

Contingency reserve requirements represent the total required contingency reserve that the BAA is expected to hold.

Note: IRO 3.2 is covered by two parts, Contingency Reserve and Contingency Availability, the BA is required to submit both values to meet the IRO requirements

6 Submit Generation Contingency Reserve Availability– IRO 3.2b

6.1 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
PutSchedule	Input	PutSchedule	EIDEService.wsdl	EIDE_v1.xsd
	Output	PutScheduleResponse		EIDE_v1.xsd
	Fault	faultReturntype		EIDE_v1.xsd


6.2 BA Entity Generation Contingency Reserve

6.2.1 Element Table

Element	Data Description	Type	Req'd
Message Info			
SysGenID	Application level relevant time and date for when this instance of the message was produced.	Number	No
TimeStamp	Application level relevant time and date for when this instance of the message was produced.	dateTime	Yes
Sender	Short name of sending BA party: ex: 'CISO'	String	No
Receiver	Short name of RC: 'CISO'	String	No
EntityCode	Short name of BA of the data being submitted: 'CISO'	String	No
ProcessID	Process ID of data process: default 0	Number	No
DataSet	Data Set ID of the data: default 0	Number	No

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Element	Data Description	Type	Req'd
ListID	List ID of the data set: default 0	Number	No
ResponseSysGenID	Response System Gen ID related to response: default 0	Number	No
RequireAck	'false/true'	String	No
AsyncReplyFlag	'false/true'	String	No
Schedule			
Schedule/ ScheduleDescription/ StartTime	Start Time of the set of generation forecast data being submitted	dateTime	Yes
Schedule/ ScheduleDescription/ EndTime	End Time of the set of generation forecast data being submitted	dateTime	Yes
Schedule/ ScheduleDescription/ AccountCode	Account Code referencing the EIDE Submission AccountCode= "ContingencyReserve.Availability."+BAA ex: ContingencyReserve.Availability.CISO Note: this is the total contingency reserve available for each BA	String	Yes
Schedule/ Quantities/ Quantity/ Value	The defined quantity for the account code for the specific time interval provided in MW	Number	Yes
Schedule/ Quantities/ Quantity/ StartTime	The start time related to the Contingency Reserve MW Availability Note: the submit user is expected to provide the data at an hourly break point interval, the system will not break the data down. For example, if a user is intending to submit 5 Hours of flat contingency amount, we would expect 5 different break points with the same MW value broken up at the hour boundary level	dateTime	Yes

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Element	Data Description	Type	Req'd
Schedule/ Quantities/ Quantity/ EndTime	<p>The end time related to the Contingency Reserve MW Availability</p> <p>Note: the submit user is expected to provide the data at an hourly break point interval, the system will not break the data down. For example, if a user is intending to submit 5 Hours of flat contingency amount, we would expect 5 different break points with the same MW value broken up at the hour boundary level</p>	dateTime	No

6.2.2 Time Submit


The generation forecast submit expects that the participants submit according to the IRO data requirements.

IRO 3.2 the data should be submitted in an hourly interval for at least 1 calendar days, for up to 7 calendar days.

6.2.3 Account Codes

Contingency reserve availability represent the total contingency reserve that the BAA has procured or is holding to meet its contingency reserve requirements

Note: IRO 3.2 is covered by two parts, Contingency Reserve and Contingency Availability, the BA is required to submit both values to meet the IRO requirements

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7 Fault Return

7.1 Fault Return

The fault return message is the same for all EIDE adapter services.

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
Event.creationTime	Event creation time.	dateTime	No
Event.severity	Event severity.	string	No
Event.priority	Event priority.	string	No
Event.sequence Number	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




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" type="m:EventLog"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="EventLog">
    <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="type" type="xs:string" minOccurs="0"/>
      <xs:element name="creationTime" type="xs:dateTime" minOccurs="0"/>
      <xs:element name="collectionType" type="xs:string" minOccurs="0"/>
      <xs:element name="collectionQuantity" type="xs:string" minOccurs="0"/>
      <xs:element name="Event" type="m:Event" maxOccurs="unbounded"/>
      <xs:element name="Service" type="m:Service" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="Event">
    <xs:sequence>
      <xs:element name="result" type="xs:string"/>
      <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="creationTime" type="xs:dateTime" minOccurs="0"/>
      <xs:element name="severity" type="xs:string" minOccurs="0"/>
      <xs:element name="priority" type="xs:string" minOccurs="0"/>
      <xs:element name="sequenceNumber" type="xs:string" minOccurs="0"/>
      <xs:element name="eventType" type="xs:string" 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:element name="description" type="xs:string"/>
      <xs:element name="comments" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>

```

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8 Appendix A – dateTime Data Type

The dateTime data type is used to specify a date and a time. Any valid XML datetime format with timezone can be used for the request, but the response will always follow one format. TimeZone information in the request and response is mandatory and it can either be specified as offset hours from UTC or use the “Z” timezone identifier.

The dateTime is specified in the following form YYYY-MM-DDThh:mm:ss[+|-]hh:mm:ss] where:
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

+ (plus) or **-** (minus) to specify an offset from the UTC time

OR

YYYY-MM-DDThh:mm:ssZ – The ‘Z’ at the end indicates that the timezone is in GMT/UTC format

Note: All components are required.

Request Examples of dateTime format:

2013-07-10T00:00:00-07:00 – offset of 7 hours based on Pacific Daylight Time

2013-01-20T00:00:00-08:00 – offset of 8 hours based on Pacific Standard Time


2013-01-20T08:00:00-00:00 – Timestamp in GMT/UTC

2013-07-10T07:00:00Z – Timestamp in GMT/UTC

Response Example of dateTime format:

2013-01-20T08:00:00-00:00 – Timestamp in GMT/UTC

2013-07-10T07:00:00-00:00 – Timestamp in GMT/UTC

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Note: There will be a standard output error response returned if the request refers to a datetime format other than the defined acceptable formats described above.

PutSchedule_RC_AP request now returns below error when submitted without mandatory EndTime element:

```
<?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:Client</faultcode>
      <faultstring>Unmarshalling Error: cvc-complex-type.2.4.b: The content of element 'Quantity' is
not complete. One of '{"http://www.nwpp.org/eide":EndTime}' is expected.</faultstring>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
```