

Technical Interface Specification For Resource Adequacy Availability Management (RAAM)

Version 1.910

Revision History

Date	Version	By	Description
10/01/09	1.0	HX	Initial version
11/05/09	1.1	BM	Revision
11/06/09	1.2	BM	Revision
11/19/09	1.3	HX	Replace New SLIC Module with RAAM Include additional examples
09/14/10	1.4	BG	DRAFT Update with SCP II interface requirements: 1. Update Unit Substitution Request with additional Outage data 2. Implement new Outage Correction services: Submit, Cancel, Retrieve
09/22/10	1.5	BG	Updated with link to web service artifacts
12/01/10	1.6	AD	Updated Section 5.7.2 to include Outage ID and MW
12/20/2010	1.7	MJJ	Updated XML samples in: - Section 4.6.3 - Section 4.7.3 - Section 4.8.3, 4.8.4 - Sections 4.9.3, 4.9.4 - Section 4.10.3, 4.10.4
1/24/2010	1.8	AD	-Changed Document to FINAL version; removed "Draft" Watermark -Updated AARF link on page 83 and include Production API URLs -Updated Section 2.5 with appropriate document names and links

Date	Version	By	Description
04/01/2013	1.9	JM	-Added replacement flag to retrieve and submit api.
<u>04/09/2013</u>	<u>1.10</u>	<u>PP</u>	<u>Corrected the link to the RAAM API xsd location for RRSQO</u>

Contents

1 Disclaimer	9
2 Introduction.....	9
2.1 Purpose	9
2.2 Contact Information	9
2.3 Release Notes for RAAM	9
2.4 Location of .XSD and .WSDL files.....	9
2.5 Related Documents	10
3 Services Overview.....	<u>1312</u>
3.1 External Market Participant Web Services	<u>1312</u>
3.2 Service Dependencies.....	<u>1413</u>
3.2.1 Unit Substitution Requests	<u>1413</u>
3.2.2 Outage Correction Requests.....	<u>1413</u>
4 Submit Unit Substitution/Prequalification Requests.....	<u>1514</u>
4.1 <i>Business Scenario</i>	<u>1514</u>
4.2 Service Level Agreement	<u>1514</u>
4.3 <i>Use Model</i>	<u>1615</u>
4.4 <i>Operation Details</i>	<u>1716</u>
4.5 WSDL	<u>1716</u>
4.6 Submit Unit Substitution Request.....	<u>1716</u>
4.6.1 Schema Definition	<u>1716</u>
4.6.2 Element Table:	<u>1716</u>
4.6.3 Example Request - New Substitution Request	<u>1918</u>

4.7 Submit Prequalification Request	<u>2120</u>
4.7.1 Schema Definition	<u>2120</u>
4.7.2 Element Table:	<u>2120</u>
4.7.3 Example Request - New Prequalification Request	<u>2322</u>
4.8 Update Unit Substitution or Prequalification Request	<u>2423</u>
4.8.1 Schema Definition	<u>2423</u>
4.8.2 Element Table:	<u>2423</u>
4.8.3 Example Request – Update Unit Substitution Request	<u>2524</u>
4.8.4 Example Request – Update Prequalifiaction Request	<u>2625</u>
4.9 Cancel Unit Substitution or Prequalification Request.....	26
4.9.1 Schema Definition	26
4.9.2 Element Table:	<u>2726</u>
4.9.3 Example Request – Cancel Substitution Request	<u>2726</u>
4.9.4 Example Request – Cancel Prequalification Request	<u>2827</u>
4.10 Third Party Status Unit Substitution or Prequalification Request	<u>2928</u>
4.10.1 Schema Definition	<u>2928</u>
4.10.2 Element Table:	<u>2928</u>
4.10.3 Example Request – Update Third-Party Evaluation Status for Substitution Request	<u>3029</u>
4.10.4 Example Request – Update Third Party Evaluation Status for Prequalification Request	30
4.11 Submit Unit Substitution/Prequalification Response	<u>3130</u>
4.11.1 Schema Definition	<u>3130</u>
4.11.2 Element Table	31
4.11.3 Example XML	<u>3332</u>
4.12 Fault Return	<u>3332</u>
4.12.1 Schema Definition	<u>3332</u>
4.12.2 Element Table	<u>3433</u>

4.12.3 Example XML File	<u>3534</u>
5 Retrieve Unit Substitution/Prequalification Requests	<u>3736</u>
5.1 Business Scenario	<u>3736</u>
5.2 Service Level Agreement	<u>3736</u>
5.3 Use Model.....	<u>3837</u>
5.4 Operation Details	<u>3837</u>
5.5 WSDL	<u>3938</u>
5.6 Retrieve Unit Substitution Requests.....	<u>3938</u>
5.6.1 Schema Definition	<u>3938</u>
5.6.2 Element Table:	<u>3938</u>
5.6.3 Example XML	<u>4241</u>
5.7 Retrieve Unit Substitution Response.....	<u>4544</u>
5.7.1 Schema Definition	<u>4544</u>
5.7.2 Element Table	<u>4544</u>
5.7.3 Example XML	<u>4948</u>
5.8 Fault Return.....	<u>5453</u>
5.8.1 Schema Definition	<u>5453</u>
5.8.2 Element Table	<u>5453</u>
5.8.3 Example XML	<u>5655</u>
6 Submit Outage Correction Requests	<u>5756</u>
6.1 Business Scenario	<u>5756</u>
6.2 Service Level Agreement	<u>5756</u>
6.3 Use Model.....	<u>5857</u>
6.4 Operation Details	<u>5958</u>
6.5 WSDL	<u>5958</u>
6.6 Submit Outage Correction Request	<u>6059</u>

6.6.1	Schema Definition	<u>6059</u>
6.6.2	Element Table:	<u>6059</u>
6.6.3	Example Request	<u>6160</u>
6.7	Cancel Outage Correction Request (Action)	<u>6362</u>
6.7.1	Schema Definition	<u>6362</u>
6.7.2	Element Table:	<u>6362</u>
6.7.3	Example Request	<u>6362</u>
6.8	Submit Outage Correction Response	<u>6463</u>
6.8.1	Schema Definition	<u>6463</u>
6.8.2	Element Table	<u>6564</u>
6.8.3	Example XML	<u>6665</u>
6.9	Fault Return	<u>6665</u>
6.9.1	Schema Definition	<u>6665</u>
6.9.2	Element Table	<u>6766</u>
6.9.3	Example XML File	<u>6867</u>
7	Retrieve Outage Correction Requests	<u>7170</u>
7.1	<i>Business Scenario</i>	<u>7170</u>
7.2	Service Level Agreement	<u>7170</u>
7.3	<i>Use Model</i>	<u>7271</u>
7.4	<i>Operation Details</i>	<u>7271</u>
7.5	WSDL	<u>7372</u>
7.6	Retrieve Outage Correction Requests	<u>7372</u>
7.6.1	Schema Definition	<u>7372</u>
7.6.2	Element Table:	<u>7372</u>
7.6.3	Example XML	<u>7473</u>
7.7	Retrieve Outage Correction Result	<u>7675</u>

7.7.1	Schema Definition	<u>7675</u>
7.7.2	Element Table	<u>7675</u>
7.7.3	Example XML	<u>7776</u>
7.8	Fault Return	<u>7978</u>
7.8.1	Schema Definition	<u>7978</u>
7.8.2	Element Table	<u>7978</u>
7.8.3	Example XML	<u>8079</u>
Appendix 1 – Data Type.....		<u>8281</u>
Appendix 2 – Getting Access to RAAM API.....		<u>8483</u>
	Digital Certificate	<u>8483</u>
	Certificate Installation.....	<u>8483</u>

1 Disclaimer

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2 Introduction

2.1 Purpose

This document describes the Market Participant interface to CAISO’s Resource Adequacy Availability Management (RAAM). It provides the WSDL, XSD, and XML information required by application programmers to create and send messages and to process response messages.

2.2 Contact Information

Please email any questions regarding business content (business scenarios, data definitions, etc.) to SIUG@caiso.com. Please email any questions regarding integrating applications with CAISO’s RAAM’s web services, usage of the APIs, or API development to SOAIntegrationGroup@caiso.com

2.3 Release Notes for RAAM

None at this time.

2.4 Location of .XSD and .WSDL files

The file names are listed in the Operational Details section of each service. All posted files can be found at the link below. The posted XSD represents the payload; all the supporting details including all the XSDs and WSDLs for each service are included in the posted file.

<http://www.caiso.com/2479/2479e7362d1e0.html>

The revised Unit Substitution API xsd that includes the isReplacement Flag is available at:

<http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx>

2.5 Related Documents

CAISO's ISO MARKET program has produced a set of documents describing its web services architecture and associated interfaces to the corresponding services. CASIO's ISO MARKET Web Services Architecture & Integration Specification is the top-level grouping of documents in this set and is comprised of two documents: B2B Security Specification and Client Public / Private Key Instructions. Market Participants and their application programmers should read these documents to gain an overall understanding of CAISO's web services architecture prior to reading any documents pertaining to specific services, including this document.

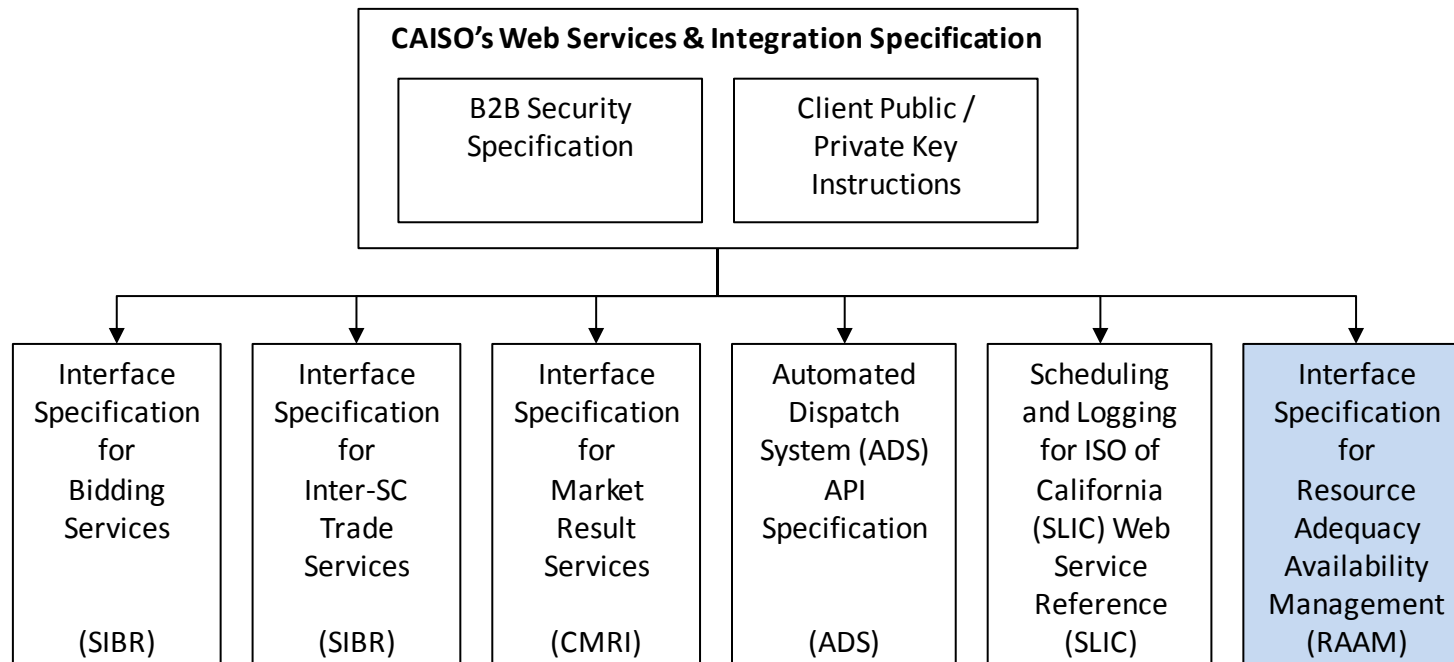


Figure 1 – ISO MARKET Web Services Interface Specification Document Set

The ISO MARKET Web Services Interface Specification Document Set is available online at the locations indicated below. Where available, links are also shown for access to additional information.

Doc. No.	Document Name	Location	Additional Information
1	B2B Security Specification	https://portal.caiso.com (you must have access to SIBR, CMRI, or BAPI)	
2	Client Public/Private Key Instructions	http://www.caiso.com/14cf/14cf687f315c0.pdf	

Doc. No.	Document Name	Location	Additional Information
3	Interface Specification for Bidding Services	http://www.caiso.com/247d/247de0f2420.pdf	http://www.caiso.com/2350/2350840c5ff70.html
4	Interface Specification for Inter-SC Trade Services	http://www.caiso.com/20a5/20a5b8cc499e0.pdf	http://www.caiso.com/2350/2350a39e27ea0.html
5	Interface Specification for Market Result Services	http://www.caiso.com/237d/237d724d65990.pdf	http://www.caiso.com/2359/2359b9866b2c0.html
6	Automated Dispatch System (ADS) API Specification	http://www.caiso.com/2481/2481d97a27f0.pdf	http://www.caiso.com/clientserv/ads/index.html
7	Scheduling and Logging for ISO of California (SLIC) Web Service Reference	http://www.caiso.com/27c3/27c3d9051f30.pdf	http://www.caiso.com/docs/2005/10/28/200510281047542112.html
8	Interface Specification for Resource Adequacy Availability Management (RAAM)	http://www.caiso.com/2814/281484083ac20.pdf (Electronic copy of this document)	

3 Services Overview

The Web Services provided to support RAAM are intended for external Market Participants usage.

3.1 External Market Participant Web Services

The external Market Participant Web Services for RAAM are:

Service	Schema	Use
submitUnitSubstitutionRequests_v20100901.wsdl	UnitSubstitutionRequests_v20100901.xsd SubmitUnitSubstitutionRequestsStandardOutput.xsd StandardOutput.xsd	Allows the Market Participants to submit, update or cancel a Unit Substitution or Prequalification request.
retrieveUnitSubstitutionRequests_v20100901.wsdl	RequestUnitSubstitutionRequests_v20100901.xsd UnitSubstitutionRequests_v20100901.xsd StandardOutput.xsd	Allows the Market Participants to retrieve Unit Substitution or Prequalification request.
submitOutageCorrectionRequest_v20100901.wsdl	OutageCorrectionRequest_v20100901.xsd SubmitOutageCorrectionStandardOutput.xsd StandardOutput.xsd	Allows the Market Participants to submit Outage Correction request.
submitOutageCorrectionAction_v20100901.wsdl	OutageCorrectionAction_v20100901.xsd SubmitOutageCorrectionStandardOutput.xsd StandardOutput.xsd	Allows the Market Participants to cancel a pending Outage Correction request.
retrieveOutageCorrectionResult_v20100901.wsdl	RequestOutageCorrectionResult_v20100901.xsd OutageCorrectionResult_v20100901.xsd StandardOutput.xsd	Allows the Market Participants to retrieve Outage Correction request.

3.2 Service Dependencies

Please refer to the ISO's [Web Service Acceptable Usage Policy](#) for guidelines on ISO web service usage.

3.2.1 Unit Substitution Requests

There are dependencies between the submitUnitSubstitutionRequests service and the retrieveUnitSubstitutionRequests.

- Unit Substitution requests for DA including third party SC acceptance where applicable must be submitted by 6:00 AM PST.
- Unit substitution requests submitted in the DA timeframe shall be evaluated by the ISO by 9:00 AM PST to allow SCs to bid into the market by 10:00 AM PST if the request was accepted.
- Unit substitution requests submitted in the RT timeframe shall be evaluated by the ISO in a timely manner.

The Retrieve service for the approved/denied Unit Substitution request has a business dependency on the Submit service and the business approving their requests. The consumer of the Retrieve service should expect to wait for the results of either approved or denied request, and the wait time is specified as above.

3.2.2 Outage Correction Requests

There are dependencies between the submitOutageCorrectionRequests and submitOutageCorrectionAction services and the retrieveOutageCorrectionResult service.

- Outage Correction requests must be submitted before 12:00 midnight on the 5th business day after an outage was submitted to SLIC.
- Outage Correction cancellations may only be submitted on requests that are pending (i.e., have not been evaluated by the ISO)
- Outage Correction requests shall be evaluated by the ISO after requests are successfully submitted.

The Retrieve service for the approved/denied Outage Correction request has a business dependency on the Submit service and the business approving their requests. The consumer of the Retrieve service should expect to wait for the results of either approved or denied request, and the wait time is specified above.

4 Submit Unit Substitution/Prequalification Requests

4.1 Business Scenario

Scheduling Coordinators submit Unit Substitution or Prequalification request to RAAM.

- On a yearly basis, before the next compliance year commences, SCs may submit requests for Unit Substitution Prequalification requests for local resources that are non RA to act as substitutes for RA units that may be on a forced outage or an ambient derate due to temperature. These prequalification requests will be applicable for the duration of the compliance year.
- In the DA market, SCs may submit requests for Unit Substitution for both local and non local resources.
- In RT, SCs may submit requests for Unit Substitution only for local resources that were prequalified for the compliance year.

4.2 Service Level Agreement

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

Service availability	24X7
Expected size of payload (average and maximum)	< 1MB
Expected frequency (average and maximum)	Internal User: Average of concurrent internal user count of 30 – 40 A peak concurrent internal user count of as many as 100 or more External User: Average concurrent external user count of 50 -100 A peak concurrent external user count of 200 or more Average of concurrent external API user count of 4 -10 A peak concurrent external API user count of 20 Data Submission:

	Peak web data submissions of 400/day, 50/hr, 10/min Total web data submissions to the tune of 10000/day, 1000/hr, 100/min
Longest time the service can be unavailable before business is impacted	Business will be impacted immediately. Contingency mechanism is available for users to submit request via Proxy Request process.
Business impact if is unavailable	
Expected response time for the service	A maximum response time for submissions of 10 sec A maximum response time for “reads” to the tune of several minutes for big searches

4.3 Use Model

The service interaction between Scheduling Coordinators and RAAM is a 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 submitUnitSubstitutionRequests service provided by RAAM. The consumer of the Web service is Scheduling Coordinator. The consumer makes a request to RAAM with Unit Substitution or Prequalification data by invoking the Submit service. RAAM is the provider of the Submit service.

The following steps are involved in the submission process:

- 1) Scheduling Coordinator prepares Unit Substitution or Prequalification data set in XML format.
- 2) Scheduling Coordinator validates the data set is compliant with the XML schema.
- 3) Scheduling Coordinator invokes the Submit service directly to send a request to RAAM with the Unit Substitution or Prequalification data.
- 4) RAAM returns an acknowledgment message back to Scheduling Coordinator.

There is one web service involved: **SubmitUnitSubstitutionRequests_v20100901**

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
submitUnitSubstitutionRequests_v20100901	Input	submitUnitSubstitutionRequestsRequest	submitUnitSubstitutionRequests_v20100901.wsdl	UnitSubstitutionRequests_v20100901.xsd
	Output	submitUnitSubstitutionRequestsResponse		SubmitUnitSubstitutionRequestsStandardOutput.xsd
	Fault	faultReturnTypes		StandardOutput.xsd

4.5 WSDL

The web service definition is specified in **submitUnitSubstitutionRequests_v20100901.wsdl**.

4.6 Submit Unit Substitution Request

4.6.1 Schema Definition

The XML schema definition is specified in UnitSubstitutionRequests_v20100901.xsd

4.6.2 Element Table:

Element	Data Description	Req'd	XPath	Type
Message Header			//m:MessageHeader/	

Message Payload			//m:MessagePayload/	
UnitSubstitutionRequest	The Unit Substitution request submitted or retrieved by user	No	m:UnitSubstitutionRequest	UnitSubstitutionRequest
Unit Substitution Request			//m:MessagePayload/m:UnitSubstitutionRequest/	
Is Prequalification Request	Whether or not this is a Prequalification request	Yes	m:isPreQualificationRequest	<u>YesNo</u>
Start Date	Effective start date for the request	Yes	m:startDate	<u>dateTime</u>
End Date	Effective end date for the request	Yes	m:endDate	<u>dateTime</u>
Outage ID	SLIC Outage ID (Not required per xsd but required per business rules for a successful submission request)	No	m:outageID	integer
Outage MW	Outage megawatt value (Not required per xsd but required per business rules for a successful submission request)	No	m:outageMW	float
Is Local	Only applicable to local resources to specify whether the intent is to be used as a local or non-local resource	No	m:isLocal	<u>YesNo</u>
Description	The detailed description of the request	No	m:description	String
Is Replacement	Whether or not this is a replacement request	Yes	m:isReplacement	<u>YesNo</u>
Substitute Resources	Resource(s) that have been selected to substitute the original resource	Yes	m:SubstituteResources	m:SubstituteResources

Original Resource	Resource that is to be substituted	Yes	m:OriginalResource	m:OriginalResource
Substitute Resources			//m:MessagePayload/m: UnitSubstitutionRequest/ m:SubstituteResources/	
substituteRACapacity	The RA Capacity for the substitute resource	Yes	m:substituteRACapacity	float
RegisteredGenerator	The unique identifier of the substitute resource	Yes	m:RegisteredGeneratorNmReq	m:RegisteredGeneratorNmReq
Registered Generator			//m:MessagePayload/m: UnitSubstitutionRequest/ m:SubstituteResources/m:RegisteredGeneratorNmReq/	
mrid	MRID stands for master resource identifier which should be globally unique.	Yes	m:mrid	<u>mrid</u>
Original Resources			//m:MessagePayload/m: UnitSubstitutionRequest/ m:OriginalResource/	
RegisteredGenerator	The unique identifier of the substitute resource	Yes	m:RegisteredGeneratorNmReq	m:RegisteredGeneratorNmReq
Registered Generator			//m:MessagePayload/m: UnitSubstitutionRequest/ m:OriginalResource/m:RegisteredGeneratorNmReq/	
mrid	MRID stands for master resource identifier which should be globally unique.	Yes	m:mrid	<u>mrid</u>

4.6.3 Example Request - New Substitution Request

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

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <CAISOWSHeader xmlns="http://www.caiso.com/soa/2006-09-30/CAISOWSHeader.xsd">
      <CAISOUUsernameToken>
        <Username>UserName</Username>
      </CAISOUUsernameToken>
    </CAISOWSHeader>
  </soap:Header>
  <soap:Body>
    <ns2:UnitSubstitutionRequests xmlns="http://www.caiso.com/soa/2010-09-01/RequestUnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2010-09-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
      <ns2:MessagePayload>
        <ns2:UnitSubstitutionRequest>
          <ns2:isPreQualificationRequest>NO</ns2:isPreQualificationRequest>
          <ns2:startDate>2010-12-04T00:00:00.000-07:00</ns2:startDate>
          <ns2:endDate>2010-12-30T23:59:00.000-07:00</ns2:endDate>
          <ns2:outageID>123123</ns2:outageID>
          <ns2:outageMW>1</ns2:outageMW>
          <ns2:isLocal>NO</ns2:isLocal>
          <ns2:isReplacement>YES</ns2:isReplacement>
          <ns2:SubstituteResources>
            <ns2:substituteRACapacity>1.0</ns2:substituteRACapacity>
            <ns2:RegisteredGenerator>
              <ns2:mrid>Resource Name</ns2:mrid> "If third party, then put third party resource
here"
            </ns2:RegisteredGenerator>
          </ns2:SubstituteResources>
          <ns2:OriginalResource>
            <ns2:RegisteredGenerator>
              <ns2:mrid> Resource Name </ns2:mrid>
            </ns2:RegisteredGenerator>
          </ns2:OriginalResource>
        </ns2:UnitSubstitutionRequest>
      </ns2:MessagePayload>
    </ns2:UnitSubstitutionRequests>
  </soap:Body>
</soap:Envelope>
```

```

    </MessagePayload>
  </UnitSubstitutionRequests>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>

```

4.7 Submit Prequalification Request

4.7.1 Schema Definition

The XML schema definition is specified in **UnitSubstitutionRequests_v20100901.xsd**.

4.7.2 Element Table:

Element	Data Description	Req'd	XPath	Type
Message Header			//m:MessageHeader/	
Message Payload			//m:MessagePayload/	
UnitSubstitutionRequest	The Prequalification request submitted or retrieved by user	No	m:UnitSubstitutionRequest	UnitSubstitutionRequest
Unit Substitution Request			//m:MessagePayload/m:UnitSubstitutionRequest/	
Is Prequalification Request	Whether or not this is a Prequalification request	Yes	m:isPreQualificationRequest	<u>YesNo</u>
Start Date	Effective start date for the request	Yes	m:startDate	<u>dateTime</u>
End Date	Effective end date for the request	Yes	m:endDate	<u>dateTime</u>
Description	The detailed description of the request	No	m:description	String

Element	Data Description	Req'd	XPath	Type
Is Replacement	Whether or not this is a replacement request	Yes	m:isReplacement	<u>YesNo</u>
Substitute Resources	Resource(s) that have been selected to substitute the original resource	Yes	m:SubstituteResources	m:SubstituteResources
Original Resource	Resource that is to be substituted	Yes	m:OriginalResource	m:OriginalResource
Substitute Resources			//m:MessagePayload/m: UnitSubstitutionRequest/ m:SubstituteResources/	
RegisteredGenerator	The unique identifier of the substitute resource	Yes	m:RegisteredGeneratorNmReq	m:RegisteredGeneratorNmReq
Registered Generator			//m:MessagePayload/m: UnitSubstitutionRequest/ m:SubstituteResources/m:RegisteredGeneratorNmReq/	
mrid	MRID stands for master resource identifier which should be globally unique.	Yes	m:mrid	<u>mrid</u>
Original Resources			//m:MessagePayload/m: UnitSubstitutionRequest/ m:OriginalResource/	
RegisteredGenerator	The unique identifier of the substitute resource	Yes	m:RegisteredGeneratorNmReq	m:RegisteredGeneratorNmReq
Registered Generator			//m:MessagePayload/m: UnitSubstitutionRequest/ m:OriginalResource/m:RegisteredGeneratorNmReq/	
mrid	MRID stands for master resource identifier which should be globally unique.	Yes	m:mrid	<u>mrid</u>

4.7.3 Example Request - New Prequalification Request

```
<?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <CAISOWSHeader xmlns="http://www.caiso.com/soa/2006-09-30/CAISOWSHeader.xsd">
      <CAISOUUsernameToken>
        <Username>UserName</Username>
      </CAISOUUsernameToken>
    </CAISOWSHeader>
  </soap:Header>
  <soap:Body>
    <ns2:UnitSubstitutionRequests xmlns="http://www.caiso.com/soa/2010-09-01/RequestUnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2010-09-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
      <ns2:MessagePayload>
        <ns2:UnitSubstitutionRequest>
          <ns2:isPreQualificationRequest>YES</ns2:isPreQualificationRequest>
          <ns2:startDate>2010-12-01T00:00:00.000-07:00</ns2:startDate>
          <ns2:endDate>2010-12-29T23:59:00.000-07:00</ns2:endDate>
          <ns2:isReplacement>NO</ns2:isReplacement >
          <ns2:SubstituteResources>
            <ns2:RegisteredGenerator>
              <ns2:mrid>Resource Name</ns2:mrid> "If third party, then put third party resource here"
            </ns2:RegisteredGenerator>
          </ns2:SubstituteResources>
          <ns2:OriginalResource>
            <ns2:RegisteredGenerator>
              <ns2:mrid>Resource Name</ns2:mrid>
            </ns2:RegisteredGenerator>
          </ns2:OriginalResource>
        </ns2:UnitSubstitutionRequest>
      </ns2:MessagePayload>
    </ns2:UnitSubstitutionRequests>
  </soap:Body>
</soap:Envelope>
```

```

    </MessagePayload>
  </UnitSubstitutionRequests>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>

```

4.8 Update Unit Substitution or Prequalification Request

4.8.1 Schema Definition

The XML schema definition is specified in **UnitSubstitutionRequests_v20100901.xsd**.

4.8.2 Element Table:

Element	Data Description	Req'd	XPath	Type
Message Header			//m:MessageHeader/	
Time Date	The date and time when the payload is published.	Yes	m:TimeDate	<u>dateTime</u> See <u>Appendix 1</u>
Source	The source of published data.	Yes	m:Source	string
Message Payload			//m:MessagePayload/	
UnitSubstitutionRequest	The Unit Substitution or Prequalification request submitted or retrieved by user	No	m:UnitSubstitutionRequest	UnitSubstitutionRequest
Unit Substitution Request			//m:MessagePayload/m:UnitSubstitutionRequest/	
requestID	The unique identified of a request	Yes	m:requestID	string

Element	Data Description	Req'd	XPath	Type
Start Date	Effective start date for the request	Yes	m:startDate	<u>dateTime</u> See <u>Appendix 1</u>
End Date	Effective end date for the request	Yes	m:endDate	<u>dateTime</u> See <u>Appendix 1</u>

4.8.3 Example Request – Update Unit Substitution Request

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <CAISOWSHeader xmlns="http://www.caiso.com/soa/2006-09-30/CAISOWSHeader.xsd">
      <CAISOUUsernameToken>
        <Username>UserName</Username>
      </CAISOUUsernameToken>
    </CAISOWSHeader>
  </soap:Header>
  <soap:Body>
    <ns2:UnitSubstitutionRequests xmlns="http://www.caiso.com/soa/2010-09-01/RequestUnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2010-09-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
      <ns2:MessagePayload>
        <ns2:UnitSubstitutionRequest>
          <ns2:requestID>321321</ns2:requestID>
          <ns2:isPreQualificationRequest>NO</ns2:isPreQualificationRequest>
          <ns2:startDate>2010-12-10T00:00:00.000-07:00</ns2:startDate>
          <ns2:endDate>2010-12-12T23:59:00.000-07:00</ns2:endDate>
        </ns2:UnitSubstitutionRequest>
      </ns2:MessagePayload>
    </ns2:UnitSubstitutionRequests>
  </soap:Body>
</soap:Envelope>
  
```

4.8.4 Example Request – Update Prequalification Request

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <CAISOWSHeader xmlns="http://www.caiso.com/soa/2006-09-30/CAISOWSHeader.xsd">
      <CAISOUUsernameToken>
        <Username>UserName</Username>
      </CAISOUUsernameToken>
    </CAISOWSHeader>
  </soap:Header>
  <soap:Body>
    <ns2:UnitSubstitutionRequests xmlns="http://www.caiso.com/soa/2010-09-01/RequestUnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2010-09-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
      <ns2:MessagePayload>
        <ns2:UnitSubstitutionRequest>
          <ns2:requestID>133313</ns2:requestID>
          <ns2:isPreQualificationRequest>YES</ns2:isPreQualificationRequest>
          <ns2:startDate>2010-10-28T00:00:00.000-07:00</ns2:startDate>
          <ns2:endDate>2010-10-29T23:59:00.000-07:00</ns2:endDate>
        </ns2:UnitSubstitutionRequest>
      </ns2:MessagePayload>
    </ns2:UnitSubstitutionRequests>
  </soap:Body>
</soap:Envelope>
```

4.9 Cancel Unit Substitution or Prequalification Request

4.9.1 Schema Definition

The XML schema definition is specified in **UnitSubstitutionRequests_v20100901.xsd**.

4.9.2 Element Table:

Element	Data Description	Req'd	XPath	Type
Message Header			//m:MessageHeader/	
Time Date	The date and time when the payload is published.	Yes	m:TimeDate	<u>dateTime</u> See Appendix 1
Source	The source of published data.	Yes	m:Source	string
Message Payload			//m:MessagePayload/	
UnitSubstitutionRequest	The Unit Substitution or Prequalification request submitted or retrieved by user	No	m:UnitSubstitutionRequest	UnitSubstitutionRequest
Unit Substitution Request			//m:MessagePayload/m:UnitSubstitutionRequest/	
requestID	The unique identified of a request	Yes	m:requestID	string
Evaluation Status	Use status of "CANCELED" to cancel a request	Yes	m:evaluationStatus	string

4.9.3 Example Request – Cancel Subsitution Request

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <CAISOWSHeader xmlns="http://www.caiso.com/soa/2006-09-30/CAISOWSHeader.xsd">
      <CAISOUUsernameToken>
        <Username>UserName</Username>
      </CAISOUUsernameToken>
    </CAISOWSHeader>
  </soap:Header>
  <soap:Body>

```

```
<ns2:UnitSubstitutionRequests xmlns="http://www.caiso.com/soa/2010-09-01/RequestUnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2010-09-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
  <ns2:MessagePayload>
    <ns2:UnitSubstitutionRequest>
      <ns2:requestID>1231233</ns2:requestID>
      <ns2:isPreQualificationRequest>NO</ns2:isPreQualificationRequest>
      <ns2:evaluationStatus>CANCELED</ns2:evaluationStatus>
    </ns2:UnitSubstitutionRequest>
  </ns2:MessagePayload>
</ns2:UnitSubstitutionRequests>
</soap:Body>
</soap:Envelope>
```

4.9.4 Example Request – Cancel Prequalification Request

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <CAISOWSHeader xmlns="http://www.caiso.com/soa/2006-09-30/CAISOWSHeader.xsd">
      <CAISOUUsernameToken>
        <Username>UserName</Username>
      </CAISOUUsernameToken>
    </CAISOWSHeader>
  </soap:Header>
  <soap:Body>
    <ns2:UnitSubstitutionRequests xmlns="http://www.caiso.com/soa/2010-09-01/RequestUnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2010-09-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
      <ns2:MessagePayload>
        <ns2:UnitSubstitutionRequest>
          <ns2:requestID>1231233</ns2:requestID>
          <ns2:isPreQualificationRequest>YES</ns2:isPreQualificationRequest>
          <ns2:evaluationStatus>CANCELED</ns2:evaluationStatus>
        </ns2:UnitSubstitutionRequest>
      </ns2:MessagePayload>
    </ns2:UnitSubstitutionRequests>
  </soap:Body>
</soap:Envelope>
```

```

    </ns2:UnitSubstitutionRequests>
  </soap:Body>
</soap:Envelope>

```

4.10 Third Party Status Unit Substitution or Prequalification Request

4.10.1 Schema Definition

The XML schema definition is specified in **UnitSubstitutionRequests_v20100901.xsd**.

4.10.2 Element Table:

Element	Data Description	Req'd	XPath	Type
Message Header			//m:MessageHeader/	
Time Date	The date and time when the payload is published.	Yes	m:TimeDate	<u>dateTime</u> See <u>Appendix 1</u>
Source	The source of published data.	Yes	m:Source	string
Message Payload			//m:MessagePayload/	
UnitSubstitutionRequest	The Unit Substitution or Prequalification request submitted or retrieved by user	No	m:UnitSubstitutionRequest	UnitSubstitutionRequest
Unit Substitution Request			//m:MessagePayload/m:UnitSubstitutionRequest/	
requestID	The unique identified of a request	Yes	m:requestID	string
Third Party Evaluation Status	Status on the request evaluated by third-party user - "ACCEPTED", "DENIED", "PENDING" (Default)	Yes	m:thirdPartyEvaluationStatus	string

Element	Data Description	Req'd	XPath	Type
Third Party Denial Reason	Reason why the request is denied by the third party	Yes, if status is "DENIED"	m:thirdPartyDenialReason	string

4.10.3 Example Request – Update Third-Party Evaluation Status for Substitution Request

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <CAISOWSHeader xmlns="http://www.caiso.com/soa/2006-09-30/CAISOWSHeader.xsd">
      <CAISOUUsernameToken>
        <Username>UserName</Username>
      </CAISOUUsernameToken>
    </CAISOWSHeader>
  </soap:Header>
  <soap:Body>
    <ns2:UnitSubstitutionRequests xmlns="http://www.caiso.com/soa/2010-09-01/RequestUnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2010-09-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
      <ns2:MessagePayload>
        <ns2:UnitSubstitutionRequest>
          <ns2:requestID>133333</ns2:requestID>
          <ns2:isPreQualificationRequest>NO</ns2:isPreQualificationRequest>
          <ns2:thirdPartyEvaluationStatus>DENIED or ACCEPTED</ns2:thirdPartyEvaluationStatus>
          <ns2:thirdPartyDenialReason>Denial Reason goes here</ns2:thirdPartyDenialReason>
        </ns2:UnitSubstitutionRequest>
      </ns2:MessagePayload>
    </ns2:UnitSubstitutionRequests>
  </soap:Body>
</soap:Envelope>
  
```

4.10.4 Example Request – Update Third Party Evaluation Status for Prequalification Request

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  
```

```

<soap:Header>
  <CAISOWSHeader xmlns="http://www.caiso.com/soa/2006-09-30/CAISOWSHeader.xsd">
    <CAISOUUsernameToken>
      <Username>UserName</Username>
    </CAISOUUsernameToken>
  </CAISOWSHeader>
</soap:Header>
<soap:Body>
  <ns2:UnitSubstitutionRequests xmlns="http://www.caiso.com/soa/2010-09-
01/RequestUnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2010-09-
01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-
13/StandardOutput.xsd">
    <ns2:MessagePayload>
      <ns2:UnitSubstitutionRequest>
        <ns2:requestID>333111</ns2:requestID>
        <ns2:isPreQualificationRequest>NO</ns2:isPreQualificationRequest>
        <ns2:thirdPartyEvaluationStatus>DENIED or ACCEPTED</ns2:thirdPartyEvaluationStatus>
        <ns2:thirdPartyDenialReason>Denial Reason goes here</ns2:thirdPartyDenialReason>
      </ns2:UnitSubstitutionRequest>
    </ns2:MessagePayload>
  </ns2:UnitSubstitutionRequests>
</soap:Body>
</soap:Envelope>S
  
```

4.11 Submit Unit Substitution/Prequalification Response

4.11.1 Schema Definition

The XML schema definition is specified in **SubmitUnitSubstitutionRequestsStandardOutput.xsd**.

4.11.2 Element Table

Element	Data Description	Req'd	XPath	Type
---------	------------------	-------	-------	------

Element		Data Description	Req'd	XPath		Type
Event Log				//m:EventLog/		
Event				//m:EventLog/m:Event/		
result		The result of the submission.	Yes	m:result		string
id		The unique identifier of the event.	Yes	m:id		string
description		The description of the event	No	m:description		string
creationTime		The creation date and time of the event	No	m:creationTime		<u>dateTime</u> See <u>Appendix 1</u>
Service				//m:EventLog/m:Service/		
id		The UUID generated unique service Id. It is different on every submission.	Yes	m:id		string
name		The service name which is "SubmitUnitSubstitutionRequests_v20100901Service"	Yes	m:name		string
UnitSubstitutionRequest				//m:EventLog/m:UnitSubstitutionRequest/		
requestID		The unique identifier of Unit Substitution or Prequalification request	Yes	m:resrequestID		string
results		The results of the request	No	m:results		string

4.11.3 Example XML

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:outputDataType xmlns="http://www.caiso.com/soa/2009-08-
01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2009-08-
01/SubmitUnitSubstitutionRequestsStandardOutput.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-
13/StandardOutput.xsd">
      <ns2:EventLog>
        <ns2:Event>
          <ns2:result>SUCCESS</ns2:result>
          <ns2:id>submitUnitSubstitutionRequestsV20100901:STrainer3:200911061634</ns2:id>
          <ns2:description>Event successful</ns2:description>
          <ns2:creationTime>2009-11-06T16:34:37.855-08:00</ns2:creationTime>
        </ns2:Event>
        <ns2:Service>
          <ns2:id>9920910</ns2:id>
          <ns2:name>unitSubstitutionSubmit</ns2:name>
        </ns2:Service>
        <ns2:UnitSubstitutionRequest>
          <ns2:requestID>263</ns2:requestID>
          <ns2:results>Unit Substitution Request 263 created</ns2:results>
        </ns2:UnitSubstitutionRequest>
      </ns2:EventLog>
    </ns2:outputDataType>
  </soap:Body>
</soap:Envelope>
```

4.12 Fault Return

4.12.1 Schema Definition

The XML schema definition is specified in **StandardOutput.xsd**.

4.12.2 Element Table

Element	Data Description	Req'd	XPath	Type
Event Log			//m:outputDataType/m:EventLog/	
Id	Event log identifier.	No	m:id	string
Name	Event log name.	No	m:name	string
Description	Event log description.	No	m:description	string
Type	Event log type.	No	m:type	string
Creation Time	Event log creation time.	No	m:creationTime	<u>dateTime</u> See <u>Appendix 1</u>
Collection Type	Event log collection type.	No	m:collectionType	string
Collection Quantity	Event log collection quantity.	No	m:collectionQuantity	string
Event			//m:outputDataType/m:Event/	
Event Result	Event result.	Yes	m:Event/m:result	string
Event. Id	Event identifier.	No	m:Event/m:id	string
Event Name	Event name.	No	m:Event/m:name	string
Event Description	Event description.	No	m:Event/m:description	string
Event Creation Time	Event creation time.	No	m:Event/m:creationTime	<u>dateTime</u> See <u>Appendix 1</u>
Event Severity	Event severity.	No	m:Event/m:severity	string
Event Priority	Event priority.	No	m:Event/m:priority	string

Element	Data Description	Req'd	XPath	Type
Event Sequence Number	Event sequence number.	No	m:Event/m:sequenceNumber	string
Event Type	Event type.	No	m:Event/m:eventType	string
Service			//m:outputDataType/m:Service/	
Service Id	Service identifier.	Yes	m:Service/m:id	string
Service Name	Service name.	Yes	m:Service/m:name	string
Service Description	Service description.	Yes	m:Service/m:description	string
Service Comments	Service comments.	Yes	m:Service/m:comments	string

4.12.3 Example XML File

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:Server</faultcode>
      <faultstring>Fault occurred while processing.</faultstring>
      <detail>
        <ns3:outputDataType xmlns="http://www.caiso.com/soa/2009-08-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns2="http://www.caiso.com/soa/2009-08-01/SubmitUnitSubstitutionRequestsStandardOutput.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
          <ns3:EventLog>
            <ns3:id>submitUnitSubstitutionRequestsV20100901:BMiner:200911081745</ns3:id>
            <ns3:name>Fault</ns3:name>
            <ns3:description>Fault Occurred</ns3:description>
            <ns3:type>Fault</ns3:type>
            <ns3:creationTime>2009-11-08T17:45:56.991-08:00</ns3:creationTime>
            <ns3:collectionType>Events</ns3:collectionType>
            <ns3:collectionQuantity>1</ns3:collectionQuantity>
          </ns3:EventLog>
        </ns3:outputDataType>
      </detail>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
```

```
<ns3:Event>
  <ns3:result>FAILURE</ns3:result>
  <ns3:id>submitUnitSubstitutionRequestsV20100901:BMiner:200911081745</ns3:id>
  <ns3:name>Validation Event</ns3:name>
  <ns3:description>Request not found with id 208</ns3:description>
  <ns3:creationTime>2009-11-08T17:45:56.991-08:00</ns3:creationTime>
  <ns3:severity>High</ns3:severity>
  <ns3:priority>High</ns3:priority>
  <ns3:sequenceNumber>1</ns3:sequenceNumber>
  <ns3:eventType>Validation</ns3:eventType>
</ns3:Event>
<ns3:Service>
  <ns3:id>26435993</ns3:id>
  <ns3:name>SubmitUnitSubstitutionRequestsV20100901</ns3:name>
  <ns3:description>SubmitUnitSubstitutionRequestsV20100901 request
submitted</ns3:description>
  <ns3:comments>SubmitUnitSubstitutionRequestsV20100901 request submitted</ns3:comments>
</ns3:Service>
</ns3:EventLog>
</ns3:outputDataType>
</detail>
</soap:Fault>
</soap:Body>
</soap:Envelope>
```

5 Retrieve Unit Substitution/Prequalification Requests

5.1 Business Scenario

Scheduling Coordinators retrieve Unit Substitution or Prequalification request via RAAM.

- An SC or ISO user may view requests that have been submitted to the ISO. This may be done as a precursor to updating/canceling a request or approving/denying a request by the ISO or third party SC
- An SC or ISO user may search for requests that have been submitted to the ISO.

5.2 Service Level Agreement

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

Service availability	24X7
Expected size of payload (average and maximum)	< 1MB
Expected frequency (average and maximum)	Internal User: Average of concurrent internal user count of 30 – 40 A peak concurrent internal user count of as many as 100 or more External User: Average concurrent external user count of 50 -100 A peak concurrent external user count of 200 or more Average of concurrent external API user count of 4 -10 A peak concurrent external API user count of 20
Longest time the service can be unavailable before business is impacted	Business will be impacted immediately. Contingency mechanism is available for users to submit request via Proxy Request process.

Business impact if is unavailable	
Expected response time for the service	A maximum response time for submissions of 10 sec A maximum response time for “reads” to the tune of several minutes for big searches

5.3 Use Model

The service interaction between Scheduling Coordinators and the New SLC Module is a retrieve process.

The data exchange follows CAISO SOA Retrieve messaging pattern. In this pattern, the data source system is the Scheduling Coordinator who initiates a data transaction by invoking a retrieveUnitSubstitutionRequests service provided by RAAM. The consumer of the Web service is Scheduling Coordinator. The consumer makes a request to RAAM by invoking the Retrieve Web service. RAAM is the provider of the Web service.

The following steps are involved in the retrieve process:

- 1) Scheduling Coordinator provides criteria to find one or more Unit Substitution or Prequalification request. The input criteria provided to RAAM is in XML format.
- 2) Scheduling Coordinator validates the data set based on the XML schema.
- 3) Scheduling Coordinator invokes the retrieveUnitSubstitutionRequests web service to send a request to RAAM.
- 4) RAAM returns the requested payload of a Unit Substitution or Prequalification message back to the Scheduling Coordinator.

There is one web service involved: **retrieveUnitSubstitutionRequests_v20100901Service**.

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
-----------	---------------	---------	------	-----

retrieveUnitSubstitutionRequests_v20100901	Input	retrieveUnitSubstitutionRequests	retrieveUnitSubstitutionRequests_v20100901.wsdl	RequestUnitSubstitutionRequests_v20100901.xsd
	Output	retrieveUnitSubstitutionRequestsResponse		UnitSubstitutionRequests_v20100901.xsd
	Fault	faultReturnTypes		StandardOutput.xsd

5.5 WSDL

The web service definition is specified in **retrieveUnitSubstitutionRequests_v20100901.wsdl**.

5.6 Retrieve Unit Substitution Requests

5.6.1 Schema Definition

The XML schema definition is specified in **RequestUnitSubstitutionRequests_v20100901.xsd**.

5.6.2 Element Table:

Element	Data Description	Req'd	XPath	Type
RequestUnitSubstitutionRequests			//m:RequestUnitSubstitutionRequests/	
RequestIDList	The list of request IDs	No	m:RequestIDList	RequestIDList
OutageIDList	The list of outage IDs	No	m:OutageIDList	OutageIDList
SubstitutionDate	The date and time when unit substitution occurred	No	m:SubstitutionDate	SubstitutionDate
OriginalResourceList	The list of original resources	No	m:OriginalResourceList	OriginalResourceList

Element	Data Description	Req'd	XPath	Type
SubstituteResourceList	The list of substitute resources	No	m:SubstituteResourceList	SubstituteResourceList
SubmissionDate	The date and time when the request was submitted	No	m:SubmissionDate	SubmissionDate
submissionBy	The user who submitted the request	No	m:submissionBy	string
description	The detailed description of the request	No	m:description	string
evaluationStatus	The evaluation status	No	m:evaluationStatus	string
isPrequalificationRequest	Whether or not this is a Prequalification request	No	m:isPrequalificationRequest	<u>YesNo</u> See Appendix 1
Request ID List Repeat 0→Unbounded			//m:RequestUnitSubstitutionRequests/m:RequestIDList	
requestID	The unique identifier of a request	No	m:requestID	string
Outage ID List Repeat 0→Unbounded			//m:RequestUnitSubstitutionRequests/m:OutageIDList	
outageID	The unique identifier of an outage	No	m:requestID	string
Substitution Date			//m:RequestUnitSubstitutionRequests/m:Substitution Date	
startDate	The effective start date of the substitution	No	m:startDate	<u>dateTime</u> See Appendix 1
endDate	The effective end date of the substitution	No	m:endDate	<u>dateTime</u> See Appendix 1

Element	Data Description		Req'd	XPath		Type
Original Resource List Repeat 0→Unbounded				//m:RequestUnitSubstitutionRequests/m:OriginalResourceList		
OriginalResource	The original resource	No	m:OriginalResource	OriginalResource		
Original Resource				//m:RequestUnitSubstitutionRequests/m:OriginalResourceList/m:OriginalResource		
resourceID	The ID of the original resource	No	m:resourceID	string		
SCID	The ID of Scheduling Coordinators (SCs) that are registered with the CAISO	No	m:SCID	string		
Substitute Resource List Repeat 0→Unbounded				//m:RequestUnitSubstitutionRequests/m:SubstituteResourceList/		
SubstituteResource	The substitute resource	Yes	m:SubstituteResource	SubstituteResource		
Substitute Resource Repeat 0→Unbounded				//m:RequestUnitSubstitutionRequests/m:SubstituteResourceList/m:SubstituteResource		
resourceID	The ID of the substitute resource	No	m:resourceID	string		
SCID	The ID of Scheduling Coordinators (SCs) that are registered with the CAISO	No	m:SCID	string		
Submission Date				//m:RequestUnitSubstitutionRequests/m:SubmissionDate		
startDate	The effective start date of the submission	Yes	m:startDate	dateTime See Appendix 1		

Element	Data Description	Req'd	XPath	Type
endDate	The effective end date of the submission	Yes	m:endDate	<u>dateTime</u> See <u>Appendix 1</u>

5.6.3 Example XML

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:req="http://www.caiso.com/soa/2009-08-01/RequestUnitSubstitutionRequests_v20100901.xsd">
```

```
<soapenv:Header/>
```

```
<soapenv:Body>
```

```
<req:RequestUnitSubstitutionRequests>
```

```
<!--Optional:-->
```

```
<req:RequestIDList>
```

```
<!--1 or more repetitions:-->
```

```
<req:requestID>208</req:requestID>
```

```
<req:requestID>214</req:requestID>
```

```
</req:RequestIDList>
```

```
<!--Optional:-->
```

```
<req:SubstitutionDate>
```

```
<req:startDate>2009-11-22T21:50:46.950-07:00</req:startDate>
```

```
<req:endDate>2009-11-24T21:50:46.950-07:00</req:endDate>
```

```
</req:SubstitutionDate>
```

```
<!--Optional:-->
```

```
<req:OriginalResourceList>
```

```
<!--1 or more repetitions:-->
```

```
<req:OriginalResource>
```

```
<!--Optional:-->
<req:resourceID>MNDALY_7_UNIT 2</req:resourceID>
<!--Optional:-->
<req:SCID>1068</req:SCID>
</req:OriginalResource>
</req:OriginalResourceList>
<!--Optional:-->
<req:SubstituteResourceList>
  <!--1 or more repetitions:-->
  <req:SubstituteResource>
    <!--Optional:-->
    <req:resourceID>CWATER_7_UNIT 2</req:resourceID>
    <!--Optional:-->
    <req:SCID>1068</req:SCID>
  </req:SubstituteResource>
</req:SubstituteResourceList>
<!--Optional:-->
<req:SubmissionDate>
  <req:startDate>2009-10-25T21:50:46.950-07:00</req:startDate>
  <req:endDate>2009-10-27T21:50:46.950-07:00</req:endDate>
</req:SubmissionDate>
<!--Optional:-->
<req:submissionBy>BMiner</req:submissionBy>
<!--Optional:-->
<req:description>test</req:description>
<!--Optional:-->
```

```
<req:evaluationStatus>ACCEPTED</req:evaluationStatus>
<!--Optional:-->
<req:isPrequalificationRequest>NO</req:isPrequalificationRequest>
</req:RequestUnitSubstitutionRequests>
</soapenv:Body>
</soapenv:Envelope>
```

5.7 Retrieve Unit Substitution Response

5.7.1 Schema Definition

The XML schema definition is specified in **UnitSubstitutionRequests_v20100901.xsd**.

5.7.2 Element Table

Element	Data Description	Req'd	XPath	Type
Message Header			//m:MessageHeader/	
Time Date	The date and time when the payload is published.	Yes	m:TimeDate	<u>dateTime</u> See Appendix 1
Source	The source of published data.	Yes	m:Source	string
Message Payload			//m:MessagePayload/	
UnitSubstitutionRequest	The Unit Substitution request submitted or retrieved by user	No	m:UnitSubstitutionRequest	m:UnitSubstitutionRequest
Unit Substitution Request			//m:MessagePayload/m:UnitSubstitutionRequest/	
Request ID	The unique identifier for Unit Substitution request or Prequalification request	No	m:RequestID	string
Is Prequalification Request	Whether or not this is a Prequalification request	Yes	m:isPreQualificationRequest	<u>YesNo</u> See Appendix 1
Start Date	Effective start date for the request	Yes	m:startDate	<u>dateTime</u> See Appendix 1

Element	Data Description	Req'd	XPath	Type
End Date	Effective end date for the request	Yes	m:endDate	<u>dateTime</u> See Appendix 1
Outage ID	SLIC Outage ID	No	m:outageID	integer
Outage MW	Outage megawatt value	No	m:outageMW	float
Is Local	Only applicable to local resources to specify whether the intent is to be used as a local or non-local resource	No	m:isLocal	<u>YesNo</u> See Appendix 1
Description	The detailed description of the request	No	m:description	string
Version	Version number	No	m:version	string
Submission By	User who submit the request	No	m:submissionBy	string
Submission Date	Date/time when the request is submitted	No	m:submissionDate	<u>dateTime</u> See Appendix 1
Denial Reason	Reason why the request is denied by ISO	No	m:denialReason	string
Denial Reason Code	Code for denial reason	No	m:denialReasonCode	string
Denial Reason Value	Value associated with denial reason code	No	m:denialReasonValue	string
Evaluation By	ISO user who evaluate the request	No	m:evaluationBy	string
Evaluation Date	Date when the request is evaluated by ISO user	No	m:evaluationDate	<u>dateTime</u> See Appendix 1

Element	Data Description	Req'd	XPath	Type
Evaluation Status	Status on the request evaluated by ISO - "Accepted", "Denied", "Pending" (Default)	No	m:evaluationStatus	string
Third Party Denial Reason	Reason why the request is denied by the third party	No	m:thirdPartyDenialReason	string
Third Party Evaluation By	Third-party user who evaluate the request	No	m:thirdPartyEvaluationBy	string
Third Party Evaluation Date	Date/time when third-party user evaluate the request	No	m:thirdPartyEvaluationDate	<u>dateTime</u> See <u>Appendix 1</u>
Third Party Evaluation Status	Status on the request evaluated by third-party user - "Accepted", "Denied", "Pending" (Default)	No	m:thirdPartyEvaluationStatus	string
Last Modified	Date/time when the request was last modified	No	m:lastModified	<u>dateTime</u> See <u>Appendix 1</u>
Substitute Resources	Resource(s) that have been selected to substitute the original resource	Yes	m:SubstituteResources	SubstituteResources
Original Resource	Resource that is to be substituted	Yes	m:OriginalResource	OriginalResource
Substitute Resources			//m:MessagePayload/m:UnitSubstitutionRequest/ m:SubstituteResources/	
substituteRACapacity	The RA Capacity for the substitute resource	Yes	m:substituteRACapacity	float
RegisteredGenerator	The unique identifier of the substitute resource	Yes	m:RegisteredGeneratorNmReq	m:RegisteredGeneratorNmReq

Element	Data Description	Req'd	XPath	Type
SchedulingCoordinator	All CAISO market participants are represented by Scheduling Coordinators (SCs) that are registered with the CAISO	No	m:SchedulingCoordinatorNmReq	m:SchedulingCoordinatorNmReq
Registered Generator			//m:MessagePayload/m:UnitSubstitutionRequest/ m:SubstituteResources/m:RegisteredGeneratorNmReq/	
mrid	MRID stands for master resource identifier which should be globally unique.	Yes	m:mrid	<u>mrid</u>
Scheduling Coordinator			//m:MessagePayload/m:UnitSubstitutionRequest/ m:SubstituteResources/m:SchedulingCoordinatorNmReq/	
mrid	MRID stands for master resource identifier which should be globally unique.	Yes	m:mrid	<u>mrid</u>
Original Resources			//m:MessagePayload/m:UnitSubstitutionRequest/ m:OriginalResource/	
RegisteredGenerator	The unique identifier of the substitute resource	Yes	m:RegisteredGeneratorNmReq	m:RegisteredGeneratorNmReq
SchedulingCoordinator	All CAISO market participants are represented by Scheduling Coordinators (SCs) that are registered with the CAISO	No	m:SchedulingCoordinatorNmReq	m:SchedulingCoordinatorNmReq
Registered Generator			//m:MessagePayload/m:UnitSubstitutionRequest/ m:OriginalResource/m:RegisteredGeneratorNmReq/	

Element	Data Description	Req'd	XPath	Type
mrid	MRID stands for master resource identifier which should be globally unique.	Yes	m:mrid	<u>mrid</u>
Scheduling Coordinator			//m:MessagePayload/m:UnitSubstitutionRequest/ m:OriginalResource/m:SchedulingCoordinatorNmReq/	
mrid	MRID stands for master resource identifier which should be globally unique.	No	m:mrid	<u>mrid</u>
Proxy Data Repeat 0→Unbounded			//m:MessagePayload/m:UnitSubstitutionRequest/ m:UnitSubstitutionProxyData/	
SC Request Date		Yes	m:SCRequestDate	<u>dateTime</u> See Appendix 1
SC First Name		Yes	m:SCFirstName	string
SC Last Name		Yes	m:SCLastName	string
SC Email		Yes	m:SCEmail	string
SC Description		Yes	m:SCDescription	string
SC Attachment		No	m:SCAttachment	string

5.7.3 Example XML

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

```
<!--Sample XML file generated by XMLSpy v2007 rel. 3 sp1 (http://www.altova.com)-->
```

```
<m:UnitSubstitutionRequests xmlns:m="http://www.caiso.com/soa/2010-09-01/UnitSubstitutionRequests_v20100901.xsd">
  <m:MessageHeader>
    <m:TimeDate>2001-12-17T09:30:47.0Z</m:TimeDate>
    <m:Source>String</m:Source>
  </m:MessageHeader>
  <m:MessagePayload>
    <m:UnitSubstitutionRequest>
      <m:requestID>String</m:requestID>
      <m:isPreQualificationRequest>YES</m:isPreQualificationRequest>
      <m:startDate>2001-12-17T09:30:47.0Z</m:startDate>
      <m:endDate>2001-12-17T09:30:47.0Z</m:endDate>
      <m:outageID>0</m:outageID>
      <m:outageMW>3.14159E0</m:outageMW>
      <m:isLocal>YES</m:isLocal>
      <m:description>String</m:description>
      <m:version>String</m:version>
      <m:submissionBy>String</m:submissionBy>
      <m:submissionDate>2001-12-17T09:30:47.0Z</m:submissionDate>
      <m:denialReason>String</m:denialReason>
      <m:denialReasonCode>String</m:denialReasonCode>
      <m:denialReasonValue>String</m:denialReasonValue>
      <m:evaluationBy>String</m:evaluationBy>
      <m:evaluationDate>2001-12-17T09:30:47.0Z</m:evaluationDate>
      <m:evaluationStatus>String</m:evaluationStatus>
      <m:thirdPartyDenialReason>String</m:thirdPartyDenialReason>
      <m:thirdPartyEvaluationBy>String</m:thirdPartyEvaluationBy>
      <m:thirdPartyEvaluationDate>2001-12-17T09:30:47.0Z</m:thirdPartyEvaluationDate>
      <m:thirdPartyEvaluationStatus>String</m:thirdPartyEvaluationStatus>
      <m:lastModified>2001-12-17T09:30:47.0Z</m:lastModified>
      <m:SubstituteResources>
        <m:substituteRACapacity>3.14159E0</m:substituteRACapacity>
      </m:SubstituteResources>
    </m:UnitSubstitutionRequest>
  </m:MessagePayload>
</m:UnitSubstitutionRequests>
```

```

    <m:RegisteredGenerator>
      <m:mrid>a</m:mrid>
    </m:RegisteredGenerator>
    <m:SchedulingCoordinator>
      <m:mrid>a</m:mrid>
    </m:SchedulingCoordinator>
  </m:SubstituteResources>
  <m:SubstituteResources>
    <m:substituteRACapacity>3.14159E0</m:substituteRACapacity>
    <m:RegisteredGenerator>
      <m:mrid>a</m:mrid>
    </m:RegisteredGenerator>
    <m:SchedulingCoordinator>
      <m:mrid>a</m:mrid>
    </m:SchedulingCoordinator>
  </m:SubstituteResources>
  <m:OriginalResource>
    <m:RegisteredGenerator>
      <m:mrid>a</m:mrid>
    </m:RegisteredGenerator>
    <m:SchedulingCoordinator>
      <m:mrid>a</m:mrid>
    </m:SchedulingCoordinator>
  </m:OriginalResource>
  <m:ProxyData>
    <m:SCRequestDate>2001-12-17T09:30:47.0Z</m:SCRequestDate>
    <m:SCFirstName>String</m:SCFirstName>
    <m:SCLastName>String</m:SCLastName>
    <m:SCEmail>String</m:SCEmail>
    <m:SCDescription>String</m:SCDescription>
    <m:SCAttachment>String</m:SCAttachment>
  </m:ProxyData>

```

```

</m:ProxyData>
<m:ProxyData>
  <m:SCRequestDate>2001-12-17T09:30:47.0Z</m:SCRequestDate>
  <m:SCFirstName>String</m:SCFirstName>
  <m:SCLastName>String</m:SCLastName>
  <m:SCEmail>String</m:SCEmail>
  <m:SCDescription>String</m:SCDescription>
  <m:SCAttachment>String</m:SCAttachment>
</m:ProxyData>
</m:UnitSubstitutionRequest>
<m:UnitSubstitutionRequest>
  <m:requestID>String</m:requestID>
  <m:isPreQualificationRequest>YES</m:isPreQualificationRequest>
  <m:startDate>2001-12-17T09:30:47.0Z</m:startDate>
  <m:endDate>2001-12-17T09:30:47.0Z</m:endDate>
  <m:outageID>0</m:outageID>
  <m:outageMW>3.14159E0</m:outageMW>
  <m:isLocal>YES</m:isLocal>
  <m:description>String</m:description>
  <m:version>String</m:version>
  <m:submissionBy>String</m:submissionBy>
  <m:submissionDate>2001-12-17T09:30:47.0Z</m:submissionDate>
  <m:denialReason>String</m:denialReason>
  <m:denialReasonCode>String</m:denialReasonCode>
  <m:denialReasonValue>String</m:denialReasonValue>
  <m:evaluationBy>String</m:evaluationBy>
  <m:evaluationDate>2001-12-17T09:30:47.0Z</m:evaluationDate>
  <m:evaluationStatus>String</m:evaluationStatus>
  <m:thirdPartyDenialReason>String</m:thirdPartyDenialReason>
  <m:thirdPartyEvaluationBy>String</m:thirdPartyEvaluationBy>
  <m:thirdPartyEvaluationDate>2001-12-17T09:30:47.0Z</m:thirdPartyEvaluationDate>

```

```

<m:thirdPartyEvaluationStatus>String</m:thirdPartyEvaluationStatus>
<m:lastModified>2001-12-17T09:30:47.0Z</m:lastModified>
<m:SubstituteResources>
  <m:substituteRACapacity>3.14159E0</m:substituteRACapacity>
  <m:RegisteredGenerator>
    <m:mrid>a</m:mrid>
  </m:RegisteredGenerator>
  <m:SchedulingCoordinator>
    <m:mrid>a</m:mrid>
  </m:SchedulingCoordinator>
</m:SubstituteResources>
<m:SubstituteResources>
  <m:substituteRACapacity>3.14159E0</m:substituteRACapacity>
  <m:RegisteredGenerator>
    <m:mrid>a</m:mrid>
  </m:RegisteredGenerator>
  <m:SchedulingCoordinator>
    <m:mrid>a</m:mrid>
  </m:SchedulingCoordinator>
</m:SubstituteResources>
<m:OriginalResource>
  <m:RegisteredGenerator>
    <m:mrid>a</m:mrid>
  </m:RegisteredGenerator>
  <m:SchedulingCoordinator>
    <m:mrid>a</m:mrid>
  </m:SchedulingCoordinator>
</m:OriginalResource>
<m:ProxyData>
  <m:SCRequestDate>2001-12-17T09:30:47.0Z</m:SCRequestDate>
  <m:SCFirstName>String</m:SCFirstName>

```

```

        <m:SCLastName>String</m:SCLastName>
        <m:SCEmail>String</m:SCEmail>
        <m:SCDescription>String</m:SCDescription>
        <m:SCAttachment>String</m:SCAttachment>
    </m:ProxyData>
    <m:ProxyData>
        <m:SCRequestDate>2001-12-17T09:30:47.0Z</m:SCRequestDate>
        <m:SCFirstName>String</m:SCFirstName>
        <m:SCLastName>String</m:SCLastName>
        <m:SCEmail>String</m:SCEmail>
        <m:SCDescription>String</m:SCDescription>
        <m:SCAttachment>String</m:SCAttachment>
    </m:ProxyData>
</m:UnitSubstitutionRequest>
</m:MessagePayload>
</m:UnitSubstitutionRequests>

```

5.8 Fault Return

5.8.1 Schema Definition

The XML schema definition is specified in **StandardOutput.xsd**.

5.8.2 Element Table

Element	Data Description	Req'd	XPath	Type
			//m:outputDataType/m:EventLog/	
Id	Event log identifier.	No	m:id	string

Element	Data Description	Req'd	XPath	Type
Name	Event log name.	No	m:name	string
Description	Event log description.	No	m:description	string
Type	Event log type.	No	m:type	string
Creation Time	Event log creation time.	No	m:creationTime	<u>dateTime</u> See <u>Appendix 1</u>
Collection Type	Event log collection type.	No	m:collectionType	string
Collection Quantity	Event log collection quantity.	No	m:collectionQuantity	string
Event Result	Event result.	Yes	m:Event/m:result	string
Event. Id	Event identifier.	No	m:Event/m:id	string
Event Name	Event name.	No	m:Event/m:name	string
Event Description	Event description.	No	m:Event/m:description	string
Event Creation Time	Event creation time.	No	m:Event/m:creationTime	<u>dateTime</u> See <u>Appendix 1</u>
Event Severity	Event severity.	No	m:Event/m:severity	string
Event Priority	Event priority.	No	m:Event/m:priority	string
Event Sequence Number	Event sequence number.	No	m:Event/m:sequenceNumber	string
Event Type	Event type.	No	m:Event/m:eventType	string
Service Id	Service identifier.	Yes	m:Service/m:id	string
Service Name	Service name.	Yes	m:Service/m:name	string
Service Description	Service description.	Yes	m:Service/m:description	string

Element	Data Description	Req'd	XPath	Type
Service Comments	Service comments.	Yes	m:Service/m:comments	string

5.8.3 Example XML

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:Server</faultcode>
      <faultstring>Fault occurred while processing.</faultstring>
      <detail>
        <ns3:outputDataType xmlns="http://www.caiso.com/soa/2009-08-01/RequestUnitSubstitutionRequests_v20100901.xsd"
xmlns:ns2="http://www.caiso.com/soa/2009-08-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.caiso.com/soa/2006-06-13/StandardOutput.xsd">
          <ns3:EventLog>
            <ns3:id>retrieveUnitSubstitutionRequestsV20100901:BMiner:200911081708</ns3:id>
            <ns3:name>Fault</ns3:name>
            <ns3:description>Fault Occurred</ns3:description>
            <ns3:type>Fault</ns3:type>
            <ns3:creationTime>2009-11-08T17:08:01.616-08:00</ns3:creationTime>
            <ns3:collectionType>Events</ns3:collectionType>
            <ns3:collectionQuantity>1</ns3:collectionQuantity>
            <ns3:Event>
              <ns3:result>There were no matching requests found</ns3:result>
              <ns3:id>retrieveUnitSubstitutionRequestsV20100901:BMiner:200911081708</ns3:id>
              <ns3:name>Search Event</ns3:name>
              <ns3:description>There were no matching requests found</ns3:description>
              <ns3:creationTime>2009-11-08T17:08:01.616-08:00</ns3:creationTime>
              <ns3:severity>Low</ns3:severity>
              <ns3:priority>Low</ns3:priority>
              <ns3:sequenceNumber>1</ns3:sequenceNumber>
              <ns3:eventType>Search</ns3:eventType>
            </ns3:Event>
          </ns3:Service>
        </ns3:outputDataType>
      </detail>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
  
```

```

<ns3:id>28122412</ns3:id>
<ns3:name>RetrieveUnitSubstitutionRequestsV20100901</ns3:name>
<ns3:description>RetrieveUnitSubstitutionRequestsV20100901 request submitted</ns3:description>
<ns3:comments>RetrieveUnitSubstitutionRequestsV20100901 request submitted</ns3:comments>
</ns3:Service>
</ns3:EventLog>
</ns3:outputDataType>
</detail>
</soap:Fault>
</soap:Body>
</soap:Envelope>

```

6 Submit Outage Correction Requests

6.1 Business Scenario

Scheduling Coordinators submit Outage Correction requests to RAAM.

- Up to 5 business days after an outage has been submitted to the ISO, SCs may submit an outage correction
- SCs may cancel a submitted pending outage correction

6.2 Service Level Agreement

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

Service availability	24X7
-----------------------------	------

Expected size of payload (average and maximum)	< 1MB
Expected frequency (average and maximum)	Internal User: Average of concurrent internal user count of 30 – 40 A peak concurrent internal user count of as many as 100 or more External User: Average concurrent external user count of 50 -100 A peak concurrent external user count of 200 or more Average of concurrent external API user count of 4 -10 A peak concurrent external API user count of 20 Data Submission: Peak web data submissions of 400/day, 50/hr, 10/min Total web data submissions of 10000/day, 1000/hr, 100/min
Longest time the service can be unavailable before business is impacted	Business will be impacted immediately.
Business impact if is unavailable	
Expected response time for the service	A maximum response time for submissions of 10 sec A maximum response time for “reads” of several minutes for big searches

6.3 Use Model

The service interaction between Scheduling Coordinators and RAAM is a 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 submitOutageCorrectionRequests service provided by RAAM. The consumer of the Web service is Scheduling Coordinator. The consumer makes a request to RAAM with Outage Correction data by invoking the Submit service. RAAM is the provider of the Submit service.

The following steps are involved in the submission process:

- 5) Scheduling Coordinator prepares Outage Correction data set in XML format.
- 6) Scheduling Coordinator validates the data set is compliant with the XML schema.
- 7) Scheduling Coordinator invokes the Submit service directly to send a request to RAAM with the Outage Correction data.
- 8) RAAM returns an acknowledgment message back to Scheduling Coordinator.

There is one web service involved: **SubmitOutageCorrectionRequests_v20100901Service**

6.4 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
submitOutageCorrectionRequests_v20100901	Input	submitOutageCorrectionRequestRequest	submitOutageCorrectionRequest_v20100901.wsdl	OutageCorrectionRequest_v20100901.xsd
	Output	submitOutageCorrectionRequestResponse		SubmitOutageCorrectionRequestsStandardOutput.xsd
	Fault	faultReturnTypes		StandardOutput.xsd

6.5 WSDL

The web service definition is specified in **submitOutageCorrectionRequest_v20100901.wsdl**.

6.6 Submit Outage Correction Request

6.6.1 Schema Definition

The XML schema definition is specified in **OutageCorrectionRequest_v20100901.xsd**.

6.6.2 Element Table:

Element	Data Description	Req'd	XPath	Type
Message Header			//m:MessageHeader/	
Time Date	The date and time when the payload is published.	Yes	m:TimeDate	<u>dateTime</u> See Appendix 1
Source	The source of published data.	Yes	m:Source	string
Message Payload			//m:MessagePayload/	
Outage Correction Repeat 1→Unbounded			//m:MessagePayload/m:OutageCorrection	
Outage Correction Type	The type of outage correction (Ambient Derate Not Due to Temperature)	Yes	m:outageCorrectionTypeCode	outageCorrectionType Code See Appendix 1
Reason	Text supporting the request	Yes	m:reason	string (Max 300 char)
Equipment Outage	Outage ID	Yes	m:EquipmentOutage/m:m:OutageCorrectionsReqEquipOutage/m:mrid	mrid See Appendix 1

Element	Data Description	Req'd	XPath	Type
Unit Substitution Request	The unique identifier for applicable Unit Substitution Request	No	m:UnitSubstitutionRequest/ m:OutageCorrectionReqUnitSub/ m:requestID	mrid See Appendix 1

6.6.3 Example Request

```

<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XMLSpy v2007 rel. 3 sp1 (http://www.altova.com)-->
<m:OutageCorrectionRequest xmlns:m="http://www.caiso.com/soa/2010-09-01/OutageCorrectionRequest_v20100901.xsd">
  <m:MessageHeader>
    <m:TimeDate>2001-12-17T09:30:47.0Z</m:TimeDate>
    <m:Source>string</m:Source>
  </m:MessageHeader>
  <m:MessagePayload>
    <m:OutageCorrection>
      <m:outageCorrectionType>ANDT</m:outageCorrectionType>
      <m:reason>string</m:reason>
      <m:EquipmentOutage>
        <m:mrid>a</m:mrid>
      </m:EquipmentOutage>
      <m:UnitSubstitutionRequest>
        <m:requestID>string</m:requestID>
      </m:UnitSubstitutionRequest>
    </m:OutageCorrection>
    <m:OutageCorrection>
      <m:outageCorrectionType>ANDT</m:outageCorrectionType>
      <m:reason>string</m:reason>
      <m:EquipmentOutage>
        <m:mrid>a</m:mrid>
      </m:EquipmentOutage>
      <m:UnitSubstitutionRequest>
        <m:requestID>string</m:requestID>
      </m:UnitSubstitutionRequest>
    </m:OutageCorrection>
  </m:MessagePayload>
</m:OutageCorrectionRequest>
  
```

```
</m:OutageCorrection>  
</m:MessagePayload>  
</m:OutageCorrectionRequest>
```

6.7 Cancel Outage Correction Request (Action)

6.7.1 Schema Definition

The XML schema definition is specified in OutageCorrectionAction_v20100901.xsd.

6.7.2 Element Table:

Element	Data Description	Req'd	XPath	Type
Message Header			//m:MessageHeader/	
Time Date	The date and time when the payload is published.	Yes	m:TimeDate	<u>dateTime</u> See Appendix 1
Source	The source of published data.	Yes	m:Source	string
Message Payload Repeat 1→Unbounded			// m:MessagePayload/m:OutageCorrection/	
Equipment Outage	Outage ID	Yes	m:EquipmentOutage/m: m:OutageCorrectionsReqEquipOu tage/m:mrid	mrid See Appendix 1
Action Request	Type of action requested	Yes	m:ActionRequestMsg/m:ActionType	ActionType See Appendix 1

6.7.3 Example Request

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

```
<!--Sample XML file generated by XMLSpy v2007 rel. 3 sp1 (http://www.altova.com)-->
<m:OutageCorrectionAction xmlns:m="http://www.caiso.com/soa/2010-09-01/OutageCorrectionAction_v20100901.xsd">
  <m:MessageHeader>
    <m:TimeDate>2001-12-17T09:30:47.0Z</m:TimeDate>
    <m:Source>string</m:Source>
  </m:MessageHeader>
  <m:MessagePayload>
    <m:OutageCorrection>
      <m:EquipmentOutage>
        <m:mrid>a</m:mrid>
      </m:EquipmentOutage>
      <m:ActionRequest>
        <m:actionName>CANCEL</m:actionName>
      </m:ActionRequest>
    </m:OutageCorrection>
    <m:OutageCorrection>
      <m:EquipmentOutage>
        <m:mrid>a</m:mrid>
      </m:EquipmentOutage>
      <m:ActionRequest>
        <m:actionName>CANCEL</m:actionName>
      </m:ActionRequest>
    </m:OutageCorrection>
  </m:MessagePayload>
</m:OutageCorrectionAction>
```

6.8 Submit Outage Correction Response

6.8.1 Schema Definition

The XML schema definition is specified in **SubmitOutageCorrectionRequestsStandardOutput.xsd**.

6.8.2 Element Table

Element		Data Description	Req'd	XPath		Type
Event Log				//m:EventLog/		
Event				//m:EventLog/m:Event/		
result		The result of the submission.	Yes	m:result		string
id		The unique identifier of the event.	Yes	m:id		string
description		The description of the event	No	m:description		string
creationTime		The creation date and time of the event	No	m:creationTime		<u>dateTime</u> See Appendix 1
Service				//m:EventLog/m:Service/		
id		The UUID generated unique service Id. It is different on every submission.	Yes	m:id		string
name		The service name which is "SubmitOutageCorrectionRequests_v20100901" Re-check wsdI	Yes	m:name		string
Outage Correction Repeat 0→Unbounded				//m:EventLog/m:Outage_Correction/		
Outage ID		The unique identifier of Outage Correction request	No	m:Outage_ID		string
Results		The results of the request	No	m:results		string

6.8.3 Example XML

```
<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XMLSpy v2007 rel. 3 sp1 (http://www.altova.com)-->
<m:outputDataType xmlns:m="http://www.caiso.com/soa/2010-09-01/SubmitOutageCorrectionStandardOutput.xsd">
  <m:EventLog>
    <m:Event>
      <m:result>string</m:result>
      <m:id>string</m:id>
      <m:description>string</m:description>
      <m:creationTime>2001-12-17T09:30:47.0Z</m:creationTime>
    </m:Event>
    <m:Service>
      <m:id>string</m:id>
      <m:name>string</m:name>
    </m:Service>
    <m:OUTAGE_CORRECTION>
      <m:OUTAGE_ID>string</m:OUTAGE_ID>
      <m:RESULTS>string</m:RESULTS>
    </m:OUTAGE_CORRECTION>
    <m:OUTAGE_CORRECTION>
      <m:OUTAGE_ID>string</m:OUTAGE_ID>
      <m:RESULTS>string</m:RESULTS>
    </m:OUTAGE_CORRECTION>
  </m:EventLog>
</m:outputDataType>
```

6.9 Fault Return

6.9.1 Schema Definition

The XML schema definition is specified in **StandardOutput.xsd**.

6.9.2 Element Table

Element	Data Description	Req'd	XPath	Type
Event Log			//m:outputDataType/m:EventLog/	
Id	Event log identifier.	No	m:id	string
Name	Event log name.	No	m:name	string
Description	Event log description.	No	m:description	string
Type	Event log type.	No	m:type	string
Creation Time	Event log creation time.	No	m:creationTime	<u>dateTime</u> See <u>Appendix 1</u>
Collection Type	Event log collection type.	No	m:collectionType	string
Collection Quantity	Event log collection quantity.	No	m:collectionQuantity	string
Event			//m:outputDataType/m:Event/	
Event Result	Event result.	Yes	m:Event/m:result	string
Event. Id	Event identifier.	No	m:Event/m:id	string
Event Name	Event name.	No	m:Event/m:name	string
Event Description	Event description.	No	m:Event/m:description	string
Event Creation Time	Event creation time.	No	m:Event/m:creationTime	<u>dateTime</u> See <u>Appendix 1</u>
Event Severity	Event severity.	No	m:Event/m:severity	string
Event Priority	Event priority.	No	m:Event/m:priority	string

Element	Data Description	Req'd	XPath	Type
Event Sequence Number	Event sequence number.	No	m:Event/m:sequenceNumber	string
Event Type	Event type.	No	m:Event/m:eventType	string
Service			//m:outputDataType/m:Service/	
Service Id	Service identifier.	Yes	m:Service/m:id	string
Service Name	Service name.	Yes	m:Service/m:name	string
Service Description	Service description.	Yes	m:Service/m:description	string
Service Comments	Service comments.	Yes	m:Service/m:comments	string

6.9.3 Example XML File

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:Server</faultcode>
      <faultstring>Fault occurred while processing.</faultstring>
      <detail>
        <ns3:outputDataType xmlns="http://www.aiso.com/soa/2009-08-01/UnitSubstitutionRequests_v20100901.xsd"
          xmlns:ns2="http://www.aiso.com/soa/2009-08-01/SubmitUnitSubstitutionRequestsStandardOutput.xsd"
          xmlns:ns3="http://www.aiso.com/soa/2006-06-13/StandardOutput.xsd">
          <ns3:EventLog>
            <ns3:id>submitUnitSubstitutionRequestsV20100901:BMiner:200911081745</ns3:id>
            <ns3:name>Fault</ns3:name>
            <ns3:description>Fault Occurred</ns3:description>
          </ns3:EventLog>
        </ns3:outputDataType>
      </detail>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>

```

```
<ns3:type>Fault</ns3:type>
<ns3:creationTime>2009-11-08T17:45:56.991-08:00</ns3:creationTime>
<ns3:collectionType>Events</ns3:collectionType>
<ns3:collectionQuantity>1</ns3:collectionQuantity>
<ns3:Event>
  <ns3:result>FAILURE</ns3:result>
  <ns3:id>submitUnitSubstitutionRequestsV20100901:BMiner:200911081745</ns3:id>
  <ns3:name>Validation Event</ns3:name>
  <ns3:description>Request not found with id 208</ns3:description>
  <ns3:creationTime>2009-11-08T17:45:56.991-08:00</ns3:creationTime>
  <ns3:severity>High</ns3:severity>
  <ns3:priority>High</ns3:priority>
  <ns3:sequenceNumber>1</ns3:sequenceNumber>
  <ns3:eventType>Validation</ns3:eventType>
</ns3:Event>
<ns3:Service>
  <ns3:id>26435993</ns3:id>
  <ns3:name>SubmitUnitSubstitutionRequestsV20100901</ns3:name>
  <ns3:description>SubmitUnitSubstitutionRequestsV20100901 request submitted</ns3:description>
  <ns3:comments>SubmitUnitSubstitutionRequestsV20100901 request submitted</ns3:comments>
</ns3:Service>
</ns3:EventLog>
</ns3:outputDataType>
</detail>
</soap:Fault>
</soap:Body>
```

</soap:Envelope>

7 Retrieve Outage Correction Requests

7.1 Business Scenario

Scheduling Coordinators retrieve Outage Correction requests via RAAM.

- An SC or ISO user may view requests that have been submitted to the ISO. This may be done as a precursor to canceling a request or approving/denying a request by the ISO
- An SC or ISO user may search for requests that have been submitted to the ISO.

7.2 Service Level Agreement

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

Service availability	24X7
Expected size of payload (average and maximum)	< 1MB
Expected frequency (average and maximum)	Internal User: Average of concurrent internal user count of 30 – 40 A peak concurrent internal user count of as many as 100 or more External User: Average concurrent external user count of 50 -100 A peak concurrent external user count of 200 or more Average of concurrent external API user count of 4 -10 A peak concurrent external API user count of 20
Longest time the service can be unavailable before business is impacted	Business will be impacted immediately.

Business impact if is unavailable	
Expected response time for the service	A maximum response time for submissions of 10 sec A maximum response time for “reads” of several minutes for big searches

7.3 Use Model

The service interaction between Scheduling Coordinators and RAAM is a retrieve process.

The data exchange follows CAISO SOA Retrieve messaging pattern. In this pattern, the data source system is the Scheduling Coordinator who initiates a data transaction by invoking a retrieveUnitSubstitutionRequests service provided by RAAM. The consumer of the Web service is Scheduling Coordinator. The consumer makes a request to RAAM by invoking the Retrieve Web service. RAAM is the provider of the Web service.

The following steps are involved in the retrieve process:

- 5) Scheduling Coordinator provides criteria to find one or more Outage Correction requests. The input criteria provided to RAAM is in XML format.
- 6) Scheduling Coordinator validates the data set based on the XML schema.
- 7) Scheduling Coordinator invokes the retrieveOutageCorrectionResult web service to send a request to RAAM.
- 8) RAAM returns the requested payload of an Outage correction message back to the Scheduling Coordinator.

There is one web service involved: **retrieveOutageCorrectionResult_v20100901**.

7.4 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
-----------	---------------	---------	------	-----

retrieveUnitSubstitutionRequests_v20100901	Input	retrieveOutageCorrectionResult	retrieveOutageCorrectionResult_v20100901.wsdl	RequestOutageCorrectionResult_v20100901.xsd
	Output	OutageCorrectionResult		OutageCorrectionResult_v20100901.xsd
	Fault	faultReturnTypes		StandardOutput.xsd

7.5 WSDL

The web service definition is specified in **retrieveOutageCorrectionResult_v20100901.wsdl**.

7.6 Retrieve Outage Correction Requests

7.6.1 Schema Definition

The XML schema definition is specified in **RequestOutageCorrectionResult_v20100901.xsd**.

7.6.2 Element Table:

Element	Data Description		Req'd	XPath		Type
Outage ID List Repeat 0→Unbounded				//m:OutageIDList/		
Outage ID	The list of Outage IDs	No	m:outageID	string		
Substitution Request ID List Repeat 0→Unbounded				//m:SubstitutionRequestIDList/		

Element	Data Description	Req'd	XPath	Type
Substitution Request ID	The list of Unit Substitution request IDs	No	m:requestID	string
Outage Date			//m:OutageDate	
startDate	The effective start date of the outage	Yes	m:startDate	<u>dateTime</u> See Appendix 1
endDate	The effective end date of the outage	Yes	m:endDate	<u>dateTime</u> See Appendix 1
Evaluation Status			//m:RequestOutageCorrectionResult/	
Evaluation Status	The status of the outage correction request	No	m:evaluationStatus	<u>string</u>

7.6.3 Example XML

```

<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XMLSpy v2007 rel. 3 sp1 (http://www.altova.com)-->
<m:OutageCorrectionRequest xmlns:m="http://www.caiso.com/soa/2010-09-01/OutageCorrectionRequest_v20100901.xsd">
  <m:MessageHeader>
    <m:TimeDate>2001-12-17T09:30:47.0Z</m:TimeDate>
    <m:Source>String</m:Source>
  </m:MessageHeader>
  <m:MessagePayload>
    <m:OutageCorrection>
      <m:outageCorrectionType>ANDT</m:outageCorrectionType>
      <m:reason>String</m:reason>
      <m:EquipmentOutage>
        <m:mrid>a</m:mrid>
      </m:EquipmentOutage>
      <m:UnitSubstitutionRequest>
        <m:requestID>String</m:requestID>
      </m:UnitSubstitutionRequest>
    </m:OutageCorrection>
  </m:MessagePayload>
</m:OutageCorrectionRequest>

```

```
        </m:UnitSubstitutionRequest>
    </m:OutageCorrection>
    <m:OutageCorrection>
        <m:outageCorrectionType>ANDT</m:outageCorrectionType>
        <m:reason>String</m:reason>
        <m:EquipmentOutage>
            <m:mrid>a</m:mrid>
        </m:EquipmentOutage>
        <m:UnitSubstitutionRequest>
            <m:requestID>String</m:requestID>
        </m:UnitSubstitutionRequest>
    </m:OutageCorrection>
</m:MessagePayload>
</m:OutageCorrectionRequest>
```

7.7 Retrieve Outage Correction Result

7.7.1 Schema Definition

The XML schema definition is specified in **OutageCorrectionResult_v20100901.xsd**.

7.7.2 Element Table

Element	Data Description	Req'd	XPath	Type
Message Header			//OutageCorrectionResult/m:MessageHeader/	
Time Date	The date and time when the payload is published.	Yes	m:TimeDate	<u>dateTime</u> See Appendix 1
Source	The source of published data.	Yes	m:Source	string
Message Payload Repeat 1→Unbounded			//OutageCorrectionResult/m:MessagePayload/m:OutageCorrection	
Outage Correction Type	User who submit the request	Yes	m:submissionBy	string
Reason	Reason why the request is denied by ISO	Yes	m:denialReason	string
Evaluation Status	Status on the request evaluated by ISO - "Accepted", "Denied", "Pending" (Default)	Yes	m:evaluationStatus	string

Element	Data Description	Req'd	XPath	Type
Evaluation Comment	Status on the request evaluated by ISO - "Accepted", "Denied", "Pending" (Default)	No	m:evaluationStatus	string
Equipment Outage	Outage ID	Yes	m:outagecorrection/ m:OutageCorrectionsRetrEquipOut age/m:mrid	mrid See Appendix 1
Unit Substitution Request	Unit Substitution Request ID	No	m:outagecorrection/ m:OutageCorrectionReqUnitSub/m :requestID	string
Registered Resource	Resource ID	Yes	m:outagecorrection/ m:RegisteredResourceNmReq/m: mrid	mrid See Appendix 1

7.7.3 Example XML

```

<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XMLSpy v2007 rel. 3 sp1 (http://www.altova.com)-->
<m:OutageCorrectionResult xmlns:m="http://www.caiso.com/soa/2010-09-01/OutageCorrectionResult_v20100901.xsd">
  <m:MessageHeader>
    <m:TimeDate>2001-12-17T09:30:47.0Z</m:TimeDate>
    <m:Source>string</m:Source>
  </m:MessageHeader>
  <m:MessagePayload>
    <m:OutageCorrection>
      <m:outageCorrectionType>ANDT</m:outageCorrectionType>
      <m:reason>string</m:reason>
      <m:evaluationStatus>string</m:evaluationStatus>
      <m:evaluationComment>string</m:evaluationComment>
      <m:EquipmentOutage>
        <m:mrid>a</m:mrid>
      </m:EquipmentOutage>
    </m:OutageCorrection>
  </m:MessagePayload>
</m:OutageCorrectionResult>

```

```

        <m:StartTime>2001-12-17T09:30:47.0Z</m:StartTime>
        <m:StopDateTime>2001-12-17T09:30:47.0Z</m:StopDateTime>
    </m:EquipmentOutage>
    <m:UnitSubstitutionRequest>
        <m:requestID>string</m:requestID>
    </m:UnitSubstitutionRequest>
    <m:RegisteredResource>
        <m:mrid>a</m:mrid>
    </m:RegisteredResource>
</m:OutageCorrection>
<m:OutageCorrection>
    <m:outageCorrectionType>ANDT</m:outageCorrectionType>
    <m:reason>string</m:reason>
    <m:evaluationStatus>string</m:evaluationStatus>
    <m:evaluationComment>string</m:evaluationComment>
    <m:EquipmentOutage>
        <m:mrid>a</m:mrid>
        <m:StartTime>2001-12-17T09:30:47.0Z</m:StartTime>
        <m:StopDateTime>2001-12-17T09:30:47.0Z</m:StopDateTime>
    </m:EquipmentOutage>
    <m:UnitSubstitutionRequest>
        <m:requestID>string</m:requestID>
    </m:UnitSubstitutionRequest>
    <m:RegisteredResource>
        <m:mrid>a</m:mrid>
    </m:RegisteredResource>
</m:OutageCorrection>
</m:MessagePayload>
</m:OutageCorrectionResult>

```

7.8 Fault Return

7.8.1 Schema Definition

The XML schema definition is specified in **StandardOutput.xsd**.

7.8.2 Element Table

Element	Data Description	Req'd	XPath	Type
			//m:outputDataType/m:EventLog/	
Id	Event log identifier.	No	m:id	string
Name	Event log name.	No	m:name	string
Description	Event log description.	No	m:description	string
Type	Event log type.	No	m:type	string
Creation Time	Event log creation time.	No	m:creationTime	date
Collection Type	Event log collection type.	No	m:collectionType	string
Collection Quantity	Event log collection quantity.	No	m:collectionQuantity	string
Event Result	Event result.	Yes	m:Event/m:result	string
Event. Id	Event identifier.	No	m:Event/m:id	string
Event Name	Event name.	No	m:Event/m:name	string
Event Description	Event description.	No	m:Event/m:description	string
Event Creation Time	Event creation time.	No	m:Event/m:creationTime	date
Event Severity	Event severity.	No	m:Event/m:severity	string
Event Priority	Event priority.	No	m:Event/m:priority	string

Element	Data Description	Req'd	XPath	Type
Event Sequence Number	Event sequence number.	No	m:Event/m:sequenceNumber	string
Event Type	Event type.	No	m:Event/m:eventType	string
Service Id	Service identifier.	Yes	m:Service/m:id	string
Service Name	Service name.	Yes	m:Service/m:name	string
Service Description	Service description.	Yes	m:Service/m:description	string
Service Comments	Service comments.	Yes	m:Service/m:comments	string

7.8.3 Example XML

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:Server</faultcode>
      <faultstring>Fault occurred while processing.</faultstring>
      <detail>
        <ns3:outputDataType xmlns="http://www.aiso.com/soa/2009-08-01/RequestUnitSubstitutionRequests_v20100901.xsd"
xmlns:ns2="http://www.aiso.com/soa/2009-08-01/UnitSubstitutionRequests_v20100901.xsd" xmlns:ns3="http://www.aiso.com/soa/2006-06-13/StandardOutput.xsd">
          <ns3:EventLog>
            <ns3:id>retrieveUnitSubstitutionRequestsV20100901:BMiner:200911081708</ns3:id>
            <ns3:name>Fault</ns3:name>
            <ns3:description>Fault Occurred</ns3:description>
            <ns3:type>Fault</ns3:type>
            <ns3:creationTime>2009-11-08T17:08:01.616-08:00</ns3:creationTime>
            <ns3:collectionType>Events</ns3:collectionType>
            <ns3:collectionQuantity>1</ns3:collectionQuantity>
            <ns3:Event>
              <ns3:result>There were no matching requests found</ns3:result>
            </ns3:Event>
          </ns3:EventLog>
        </ns3:outputDataType>
      </detail>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
  
```

```
<ns3:id>retrieveUnitSubstitutionRequestsV20100901:BMiner:200911081708</ns3:id>
<ns3:name>Search Event</ns3:name>
<ns3:description>There were no matching requests found</ns3:description>
<ns3:creationTime>2009-11-08T17:08:01.616-08:00</ns3:creationTime>
<ns3:severity>Low</ns3:severity>
<ns3:priority>Low</ns3:priority>
<ns3:sequenceNumber>1</ns3:sequenceNumber>
<ns3:eventType>Search</ns3:eventType>
</ns3:Event>
<ns3:Service>
  <ns3:id>28122412</ns3:id>
  <ns3:name>RetrieveUnitSubstitutionRequestsV20100901</ns3:name>
  <ns3:description>RetrieveUnitSubstitutionRequestsV20100901 request submitted</ns3:description>
  <ns3:comments>RetrieveUnitSubstitutionRequestsV20100901 request submitted</ns3:comments>
</ns3:Service>
</ns3:EventLog>
</ns3:outputDataType>
</detail>
</soap:Fault>
</soap:Body>
</soap:Envelope>
```

Appendix 1 – Data Type

1. 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, the time component will be set using Pacific Prevailing Time (Pacific Standard Time or Pacific Daylight Time, as applicable), for example:

<startdate>2009-05-30T00:00:00.000-7:00</startdate>

2. The **YesNo data type** is used to specify a string with the following enumerations:

- Yes
- No

3. The **mrid data type** indicates Master Resource ID and is used to specify a string with the following restriction:

- The minimum length is 1
- The maximum length is 32

4. The **outageCorrectionTypeCode data type** is used to specify a string with the following enumeration:

- ANDT

5. The **OutageCorrectionsReqEquipOutage data type** is used to specify a string with the following enumeration:
 - Mrid
6. The **OutageCorrectionsRetrEquipOutage data type** is used to specify a string with the following enumeration:
 - Mrid
7. The **OutageCorrectionReqUnitSub data type** is used to specify a string with the following enumeration:
 - Request ID
8. The **ActionType data type** is used to specify a string with the following enumeration:
 - CANCEL

Appendix 2 – Getting Access to RAAM API

Digital Certificate

A Digital Certificate must be obtained and installed before a user can access RAAM API for the first time.

Please submit your request utilizing the current Integration Application Request Form. The Integration Application Request Form can be found at the following link:

<http://www.caiso.com/Documents/UserApplicationAccessRequestForm.xls> When requesting application access, please download the latest form from the website every time. The Integration Application Request Form continues to be very dynamic as new applications and environments are rolled out. By accessing the current form every time, you will be able to select from all the available applications and environments, and all the necessary information will be collected.

- **Fill out** the form following the instructions, as shown below.
- **Save** as an Excel file to your drive.
- **Email** the completed form to CertRequest@caiso.com

Certificate Installation

Once approved, Certificate Request replies via email with RAAM API certificate and password. A password is required for the initial installation of the certificate. All ensuing accesses automatically connect the user.

- **Save** the certificate file and installation PIN in a secure location for possible future use **and follow** the installation instructions.

Application Access

Access to RAAM API follows the same standards as the existing ISO market services. Client Development should follow similar patterns.

Staging Environment URL information will be posted 2 weeks prior to the start of testing.

Production Environment URL information is as follows:

- Market Participant Portal (GUI) <https://portal.caiso.com>
- Unit Substitution (RAAM) API

Submit Unit Substitutions <https://portal.caiso.com/scp/services/unitSubstitutionSubmitV20100901>

Retrieve Unit Substitutions <https://portal.caiso.com/scp/services/unitSubstitutionRetrieveV20100901>

- Outage Correction (SLIC) API

Submit Outage Correction Requests <https://portal.caiso.com/scp/services/outageCorrectionSubmitRequestV20100901>

Submit Outage Corrections <https://portal.caiso.com/scp/services/outageCorrectionSubmitActionV20100901>

Retrieve Outage Correction Results <https://portal.caiso.com/scp/services/outageCorrectionRetrieveResultV20100901>