



Midcontinent Independent System Operator

Financial Transmission Rights System

API Definitions for Report Download Data Exchange with MISO Customers

Version 0.2



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1 INTRODUCTION

1.1 Revision History

Date	Version	Description	Author
08/15/2013	0.1	- Initial version	Nexant
06/24/2023	0.2	- Remove Public Historical Bid Download - Update sample of Public Source/Sink Download - Add Public ESSP Download	Resource Innovations

1.2 Purpose

This is draft document. None of the information should be considered 'FINAL.' The purpose of this document is to give members a forward look at the Nexant i-HEDGE™ FTR System interfaces for FTR Downloads. This document should only serve as a planning tool. In this document, only the high level API definitions are described without considering the actual message structure.

1.3 SOAP Message Structure

The SOAP message structure used in the Nexant i-HEDGE FTR System is compliant with version 1.1 of the WS-I Basic Profile specification¹. Therefore, the WSDL 1.1 schema and XML 1.0 (second edition) are used.

1.4 References

Document Name	Version	Description	Author
FtrDownloadSchema_v1_0.xsd	1.0.0	XML schema definitions for FTR download APIs	Nexant
FtrDownloadService_v1_0.wsdl	1.0.0	Web Service definitions for FTR download APIs	Nexant
MISO FTR_MUI_XML_Reference_Ver10.0-Volume 9.7	10.0 – Volume 9.7	XML schema definitions for MUI download files	Nexant

¹ <http://www.ws-i.org/Profiles/BasicProfile-1.1.html>



NexantCommonStructuresSchema_v1_0.xsd	1.0.0	XML schema defintions for FTR Service Exceptions and some common simpleType	Nexant
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2 API DEFINITIONS

The SOAP 1.1 based Web Service provides a programmatic means of interacting with the MUI Subsystem of the Nexant i-HEDGE FTR System. The interface is backed by XML Schema definitions (XSDs). The input SOAP requests and the corresponding SOAP responses adhere to the defined XSD. The error responses containing the validation error messages would be provided as SOAP Fault messages following the standard SOAP based communication mechanism.

In general, all the operations will have a success and an error response messages backed by an XSD.

- Success - A message along with any uniquely generated IDs are provided as the response
- Error - A message along with invalid requests and detailed error message are provided as the response. The error message would match with the MUI Web interface error report in its content

The Download web service will consist of operation(s) that provide the necessary data to the Market Participants to download all the data pertaining to the various markets.

2.1 Public General Download

2.1.1 API Description

getPublicGeneralDownload(Download Type, Download File Format) is an API for retrieving public general FTR data for a given data type. The response, ***getPublicDownloadResponse***, returns a compressed folder containing the data file(s). The schema definition of the file in the compressed folder is in section 2 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).

2.1.2 Download Type and Download File Format for Public General Download

Currently, there are two download types for public general download.

- EXISTING_FTR – the download file for this download type contains all unexpired FTRs originated from an auction market or secondary market in the FTR System. The data in this download file reflects the available MW and effective dates of FTRs sold in a monthly auction or in the secondary market. Any expired FTRs or any FTRs which their effective period and MW amounts are completely sold will not be shown in the existing FTR download file. The contents of the download file are updated when the MISO FTR Market Operator triggers the update and there are new, updated or expired FTRs.
- ARR_ZONE_REVENUE – the download file for this download type contains the auction revenue corresponding to feasible ARRs on an ARR zone basis for the specified time period. The contents of the download file are updated when the MISO FTR Market Operator triggers the update.

The download file formats that are supported are CSV or XML.



2.1.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

Download Type Not Found: This indicates that the download type is incorrect. It must be EXISTING_FTR or ARR_ZONE_REVENUE.

Download File Format Not Found: This indicates that the download file format is incorrect. It must be CSV or XML.

2.1.4 Sample of Public General Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:v1="http://api.miso.org/schema/ftr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPublicGeneralDownload>
      <ftr:downloadType>EXISTING_FTR</ftr:downloadType>
      <ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
    </ftr:getPublicGeneralDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.1.5 Sample of Public General Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPublicGeneralDownloadResponse
xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/ftr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
      </ns2:return>
    </ns2:getPublicGeneralDownloadResponse>
  </soap:Body>
</soap:Envelope>
```

2.1.6 Sample of Fault Response

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



```
<faultcode>soap:Client</faultcode>
<faultstring>Unmarshalling Error: cvc-enumeration-valid: Value 'CONTINGENC' is not facet-valid
    with respect to enumeration '[EXISTING_FTR, ARR_ZONE_REVENUE]'. It must be a value from
    the enumeration.</faultstring>
</soap:Fault>
</soap:Body>

</soap:Envelope>
```

2.2 Public Network Download

2.2.1 API Description

getPublicNetworkDownload(Market Name, Download Type, Download File Format) is an API for retrieving public FTR network data for a given allocation or auction market and download type. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the files in the compressed folder is in section 3 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).

2.2.2 Download Types and Download File Format for Public Network Download

There are nine download types for public network download. The network data of a market are available when the MISO FTR Market Operator completes the market creation and setup.

- NETWORK_MODEL – the network topology which is used to run a specific period and time-of-use of an allocation or an auction market. The system creates one network download file per period and time-of-use associated with the given market.
- CONTINGENCY – the contingency data. The system creates one contingency download file per period associated with the given market.
- SCHEDULED_OUTAGE – the scheduled outage data. The system creates one scheduled outage download file per period associated with the given market.
- LOOP_FLOW – the loop flow data. The system creates one loop flow download file per period associated with the given market.
- MONITORED_LINE_TRANSFORMER – the monitored line and transformer data. The system creates one monitored lines and transformers download file per period associated with the given market.
- FLOWGATE – the flowgate data. The system creates one flowgate download file per period associated with the given market.
- CONTINGENCY_SPECIFIC_CONSTRAINT – the contingency specific constraint data. The system creates one contingency specific constraints file per period associated with the given market.
- NOMOGRAM – the nomogram data. The system creates one nomogram file per period associated with the given market.
- PAR_CONTROL – the phase angle regulator control data. The system creates one phase angle regulator control file per period associated with the given market.
- ESSP – Electrical Similar Settlement Points



The download file formats that are supported are CSV, XML or RAW. The RAW format is applicable for network data download only.

2.2.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

MKT0001: Market name does not exist in the system. This indicates that the market name is not valid in the FTR system. The name may be misspelled or the market has not been created by the MISO FTR Market Operator.

DWL0001: Download type is invalid. This indicates that the download type is incorrect. It must be one of download types listed in 2.2.2.

DWL0002: Download file format is invalid for the specified download type. This indicates that the download file format is incorrect. It must be CSV or XML.

DWL0003: Download files are not yet generated.

2.2.4 Sample of Public Network Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ftr="http://api.miso.org/schema/ftr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPublicNetworkDownload>
      <ftr:marketName>Annual_Allocation_2012</ftr:marketName>
      <ftr:downloadType>FLOWGATE</ftr:downloadType>
      <ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
    </ftr:getPublicNetworkDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.2.5 Sample of Public Network Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPublicNetworkDownloadResponse
xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/ftr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
      </ns2:return>
    </ns2:getPublicNetworkDownloadResponse>
  </soap:Body>
</soap:Envelope>
```



```
</ns2:getPublicNetworkDownloadResponse>
</soap:Body>
</soap:Envelope>
```

2.2.6 Sample of Public Network Download Fault Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:Server</faultcode>
      <faultstring>Market name does not exist in the system.</faultstring>
      <detail>
        <ftrServiceException xmlns="http://api.miso.org/schema/ftr/Common/v1"
xmlns:ns2="http://api.miso.org/schema/ftr/ArrNomination/v1">
          <severity>ERROR</severity>
          <description>Market name does not exist in the system.</description>
          <errorCode>MKT0001</errorCode>
          <serviceVersion>1.0.0</serviceVersion>
        </ftrServiceException>
      </detail>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
```

2.3 Public Allocation Market Data Download

2.3.1 API Description

getPublicAllocationDataDownload(Allocation Market Name, Download Type, Download File Format) is an API for retrieving the data associated with the given allocation market name and download type. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the files in the compressed folder is in section 4 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).

2.3.2 Download Types and Download File Format for Public Allocation Market Data Download

Currently, there are two download types for public allocation market data download. The data are available when the MISO FTR Market Operator completes the allocation market creation and setup.

- **SOURCE_SINK** – the download file contains aggregated pricing nodes used for sources and sinks of ARRs, their type, applicable time-of-use, associated pricing nodes and buses. The system creates one source/sink download file per period associated with the given market
- **INITIAL_SYSTEM_LOADING** – the download file contains details of the initial loading on transmission apparatus due to loop flow and base loading ARRs for a stage of a seasonal ARR allocation. The system creates one initial loading download file per period associated with the given market.



The download file formats that are supported are CSV or XML.

2.3.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

MKT0001: Market name does not exist in the system. This indicates that the allocation market name is not valid in the FTR system. The possible reasons include 1) the name may be misspelled, 2) it may not be the name of an allocation but of an auction, or 3) the market has not been created by the MISO FTR Market Operator.

DWL0001: Download type is invalid. This indicates that the download type is incorrect. It must be one of download types listed in 2.3.2.

DWL0002: Download file format is invalid for the specified download type. This indicates that the download file format is incorrect. It must be CSV or XML.

DWL0003: Download files are not yet generated.

2.3.4 Sample of Public Allocation Market Data Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ftr="http://api.miso.org/schema/ftr/Download/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPublicAllocationDataDownload>
      <ftr:marketName>2012 Annual Allocation</ftr:marketName>
      <ftr:stageLevel>STAGE_1A</ftr:stageLevel>
      <ftr:downloadType>SOURCE_SINK</ftr:downloadType>
      <ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
    </ftr:getPublicAllocationDataDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.3.5 Sample of Public Allocation Market Data Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPublicAllocationDataDownloadResponse
xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/ftr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
      </ns2:return>
    </ns2:getPublicAllocationDataDownloadResponse>
  </soap:Body>
</soap:Envelope>
```



```
</ns2:getPublicAllocationDataDownloadResponse>  
</soap:Body>  
</soap:Envelope>
```

2.3.6 Sample of Public Allocation Market Data Fault Response

See a sample of fault response in 2.1.6 and 2.2.6.

2.4 Public Auction Market Data Download

2.4.1 API Description

getPublicAuctionDataDownload(Auction Market Name, Download Type, Download File Format) is an API for retrieving the data associated with the given auction market name and download type. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the file in the compressed folder is in section 4 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).

2.4.2 Download Types and Download File Format for Public Auction Market Data Download

There are three download types for public auction market data download. The data are available when the MISO FTR Market Operator completes the auction market creation and setup.

- **SOURCE_SINK** – the download file contains aggregated pricing nodes used for sources and sinks of ARRs, their type, applicable time-of-use, associated pricing nodes and buses. The system creates one source/sink download file per period associated with the given market
- **BASE_LOADING_FTR** – the download file contains existing FTRs originated from previous auction covering the same auction period. The system creates one base loading FTR download file per monthly auction (no base loading FTR is available for an annual auction).
- **INITIAL_SYSTEM_LOADING** – the download file contains details of the initial loading on transmission apparatus due to loop flow and base loading FTRs for a round of an annual or monthly FTR auction. The system creates one initial loading download file per round per period associated with the given market.

The download file formats that are supported are CSV or XML.

2.4.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

MKT0001: Market name does not exist in the system. This indicates that the market name is not valid in the FTR system. The possible reasons include 1) the name may be misspelled, 2) it may not be the name of an auction but of an allocation, or 3) the market has not been created by the MISO FTR Market Operator.

DWL0001: Download type is invalid. This indicates that the download type is incorrect. It must be one of download types listed in 2.4.2.



DWL0002: Download file format is invalid for the specified download type. This indicates that the download file format is incorrect. It must be CSV or XML.

DWL0003: Download files are not yet generated.

2.4.4 Sample of Public Auction Market Data Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ftr="http://api.miso.org/schema/ftr/Download/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPublicAuctionDataDownload>
      <ftr:marketName>2012 Annual Auction</ftr:marketName>
      <ftr:roundLevel>ROUND_1</ftr:roundLevel>
      <ftr:downloadType>SOURCE_SINK</ftr:downloadType>
      <ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
    </ftr:getPublicAuctionDataDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.4.5 Sample of Public Auction Market Data Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPublicAuctionDataDownloadResponse
xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/ftr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
      </ns2:return>
    </ns2:getPublicAuctionDataDownloadResponse>
  </soap:Body>
</soap:Envelope>
```

2.4.6 Sample of Public Auction Results Market Data Download Fault Response

See a sample of fault response in 2.1.6 and 2.2.6.

2.5 Public Allocation Result Download

2.5.1 API Description

getPublicAllocationResultDownload(Allocation Market Name, Stage Level, Download Type, Download File Format) is an API for retrieving the results in a specified stage of an ARR allocation. The



response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the files in the compressed folder is in section 5 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).

2.5.2 Download Types and Download File Format for Public Allocation Result Download

Currently, there are two download types for public allocation market data download. The data are available after the MISO FTR Market Operator posts the results of the ARR allocation.

- **BINDING_CONSTRAINT** – the download file contains binding constraints from running the given stage of the allocation market. The system creates one binding constraint download file per period and stage of the allocation market.
- **SENSITIVITY_LOOPFLOW** – the download file contains the sensitivities of the binding constraints to loop flow PTP FTRs for each stage of a seasonal allocation. The system creates one sensitivity download file per stage of the allocation market.

The download file formats that are supported are CSV or XML.

2.5.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

MKT0001: Market name does not exist in the system. This indicates that the allocation market name is not valid in the FTR system. The possible reasons include 1) the name may be misspelled, 2) it may not be the name of an allocation but of an auction, 3) the market has not been created by the MISO FTR Market Operator, or 4) the market results have not been posted by the MISO FTR Market Operator.

MKT0005=Stage name does not exist or is not associated with the specified market. This indicates that the stage level is not valid. It must match the predefined StageLevel, i.e. STAGE_1A, RESTORATION or STAGE_1B and the stage must be applicable to the allocation market.

DWL0001: Download type is invalid. This indicates that the download type is incorrect. It must be one of download types listed in 2.5.2.

DWL0002: Download file format is invalid for the specified download type. This indicates that the download file format is incorrect. It must be CSV or XML.

DWL0003: Download files are not yet generated.

2.5.4 Sample of Public Allocation Result Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ftr="http://api.miso.org/schema/ftr/ftr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPublicAllocationResultDownload>
      <ftr:marketName>2012 Annual Allocation</ftr:marketName>
      <ftr:stageLevel>STAGE_1A</ftr:stageLevel>
```




```
<ftr:downloadType>BINDING_CONSTRAINT</ftr:downloadType>
<ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
</ftr:getPublicAllocationResultDownload>
</soapenv:Body>
</soapenv:Envelope>
```

2.5.5 Sample of Public Allocation Result Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPublicAllocationResultDownloadResponse
      xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
      xmlns="http://api.miso.org/schema/ftr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
          xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
      </ns2:return>
    </ns2:getPublicAllocationResultDownloadResponse>
  </soap:Body>
</soap:Envelope>
```

2.5.6 Sample of Public Allocation Result Download Fault Response

See a sample of fault response in 2.1.6 and 2.2.6.

2.6 Public Auction Result Download

2.6.1 API Description

getPublicAuctionResultDownload(Auction Market Name, Round Level, Download Type, Download File Format) is an API for retrieving the results in a specified round of a FTR auction. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the files in the compressed folder is in section 5 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).

2.6.2 Download Types and Download File Format for Public Auction Result Download

There are four download types for public auction market data download. The data are available after the MISO FTR Market Operator posts the results of the FTR auction.

- **AUCTION_RESULT** – the download file contains auction results associated with FTR buy bids and FTR sell offers. The system creates one auction result download file per period and round of the auction market.



- **BINDING_CONSTRAINT** – the download file contains binding constraints from running the given round of the auction market. The system creates one binding constraint download file per period and round of the auction market.
- **SENSITIVITY_LOOPFLOW** – the download file contains the sensitivities of the binding constraints to loop flow PTP FTRs for each round of an auction (seasonal or monthly). The system creates one sensitivity download file per period and round of the auction market.
- **SOURCE_SINK_SHADOW_PRICE** – the download file contains auction clearing prices associated with aggregated pricing nodes and time-of-uses. The system creates one auction clearing price download file per period and round of the auction market.

The download file formats that are supported are CSV or XML.

2.6.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

MKT0001: Market name does not exist in the system. This indicates that the auction market name is not valid in the FTR system. The possible reasons include 1) the name may be misspelled, 2) it may not be the name of an auction but of an allocation, 3) the market has not been created by the MISO FTR Market Operator, or 4) the market results have not been posted by the MISO FTR Market Operator.

MKT0002: Round name does not exist or is not associated with the specified market. This indicates that the round level is not valid. It must match the predefined RoundLevel, i.e. ROUND_1, ROUND_2 or ROUND_3 and the round must be applicable to the auction market.

DWL0001: Download type is invalid. This indicates that the download type is incorrect. It must be one of download types listed in 2.6.2.

DWL0002: Download file format is invalid for the specified download type. This indicates that the download file format is incorrect. It must be CSV or XML.

DWL0003: Download files are not yet generated.

2.6.4 Sample of Public Auction Results Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ftr="http://api.miso.org/schema/ftr/ftr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPublicAuctionResultDownload>
      <ftr:marketName>2012 Annual Auction</ftr:marketName>
      <ftr:roundLevel>ROUND_1</ftr:roundLevel>
      <ftr:downloadType>BINDING_CONSTRAINT</ftr:downloadType>
      <ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
    </ftr:getPublicAuctionResultDownload>
  </soapenv:Body>
```



```
</soapenv:Envelope>
```

2.6.5 Sample of Public Auction Results Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPublicAuctionResultDownloadResponse
      xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
      xmlns="http://api.miso.org/schema/ftr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
          xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
        </ns2:return>
      </ns2:getPublicAuctionResultDownloadResponse>
    </soap:Body>
  </soap:Envelope>
```

2.6.6 Sample of Public Auction Results Download Fault Response

See a sample of fault response in 2.1.6 and 2.2.6.

2.7 Public Historical Nomination Download

2.7.1 API Description

getPublicHistoricalNominationDownload(Market Name, Download File Format) is an API for retrieving the historical ARR nomination data pertaining to the given market name. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the file in the compressed folder is in section 6 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0docx).

2.7.2 Download Types and Download File Format for Public Historical Nomination Download

There is one download type for public historical nomination data download. The data are available 6 months after the MISO FTR Market Operator posts the results of the ARR allocation.

- **HISTORICAL_NOMINATION** – the download file contains all ARR nominations submitted to all stages of the allocation market. The system creates one historical nomination download file per period of the allocation market.

The download file formats that are supported are CSV or XML.

2.7.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.



MKT0001: Market name does not exist in the system. This indicates that the allocation market name is not valid in the FTR system. The possible reasons include 1) the name may be misspelled, 2) it may not be the name of an allocation but of an auction, 3) the market has not been created by the MISO FTR Market Operator, or 4) the market results have not been posted by the MISO FTR Market Operator for the qualified period.

DWL0001: Download type is invalid. This indicates that the download type is incorrect. It must be one of download types listed in 2.7.2.

DWL0002: Download file format is invalid for the specified download type. This indicates that the download file format is incorrect. It must be CSV or XML.

DWL0003: Download files are not yet generated.

2.7.4 Sample of Public Historical Nomination Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ftr="http://api.miso.org/schema/ftr/ftr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPublicHistoricalNominationDownload>
      <ftr:marketName>2012 Annual Allocation</ftr:marketName>
      <ftr:downloadType>HISTORICAL_NOMINATION</ftr:downloadType>
      <ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
    </ftr:getPublicHistoricalNominationDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.7.5 Sample of Public Historical Nomination Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPublicHistoricalNominationDownloadResponse
xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/ftr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
      </ns2:return>
    </ns2:getPublicHistoricalNominationDownloadResponse>
  </soap:Body>
</soap:Envelope>
```



2.7.6 Sample of Public Historical Nomination Download Fault Response

See a sample of fault response in 2.1.6 and 2.2.6.

2.8 Private General Download

2.8.1 API Description

getPrivateGeneralDownload(Download Type, Download File Format) is an API for retrieving the general data pertaining to the given download type for the market participant. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the file in the compressed folder is in section 7 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).

2.8.2 Download Types and Download File Format for Private General Download

There are three download types for private general download.

- **EXISTING_ARR** – the download file for this download type contains all unexpired ARR originated from an allocation market and owned by the specified asset owner. The effective period and MW amount of the existing ARRs reflect the ARRs awarded from the allocation market and they do not reflect the remaining after the self-scheduling in an auction.
- **PRIVATE_EXISTING_FTR** – the download file for this download type contains all unexpired FTRs originated from an auction market or secondary market and owned by the specified asset owner. The data in this download file reflects the available MW and effective dates of FTRs sold in a monthly auction or in the secondary market. Any expired FTRs or any FTRs which their effective period and MW amounts are completely sold will not be shown in the existing FTR download file.
- **STAGE_2_ARR** – the download file for this download type contains all unexpired Stage 2 ARRs in the system owned by the specified asset owner. The data in this download file reflects the available MW and the ARR MWs as a percentage over all Stage 2 ARRs assigned to all asset owners.

The download file formats that are supported are CSV or XML.

2.8.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

DWL0001: Download type is invalid. This indicates that the download type is incorrect. It must be one of download types listed in 2.9.2.

DWL0002: Download file format is invalid for the specified download type. This indicates that the download file format is incorrect. It must be CSV or XML.

DWL0003: Download files are not yet generated.



2.8.4 Sample of Private General Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:fttr="http://api.miso.org/schema/fttr/fttr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <fttr:getPrivateGeneralDownload>
      <fttr:downloadType>XML</fttr:downloadType>
      <fttr:downloadFileFormat>EXISTING_ARR</fttr:downloadFileFormat>
    </fttr:getPrivateGeneralDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.8.5 Sample of Private General Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPrivateGeneralDownloadResponse
xmlns:ns2="http://api.miso.org/schema/fttr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/fttr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
      </ns2:return>
    </ns2:getPrivateGeneralDownloadResponse>
  </soap:Body>
</soap:Envelope>
```

2.8.6 Sample of Private General Download Fault Response

See a sample of fault response in 2.1.6 and 2.2.6.

2.9 Private Allocation Result Download

2.9.1 API Description

getPrivateAllocationResultDownload(Allocation Market Name, Stage Level, Download Type, Download File Format) is an API for retrieving allocation results for the market participant pertaining to the given market, stage level and download type. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the files in the compressed folder is in section 9 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).



2.9.2 Download Types and Download File Format for Private Allocation Market Results

Currently, there are three download types for private allocation market result download. The data are available after the MISO FTR Market Operator posts the results of the ARR allocation.

- **ALLOCATION_RESULT** – the download file contains information regarding ARR Nominations and their allocated MW amounts. The system creates one allocation result download file per period and stage of the allocation market.
- **SENSITIVITY_NOMINATION** – the download file contains sensitivities of binding constraints to candidate ARR Nominations. The system creates one sensitivity download file per period and stage of the allocation market.
- **INFEASIBLE_ARR** – the download file contains the details of the Infeasible ARRs allocated to the specific Market Participant in the multi-stage ARR seasonal allocation. The system creates one Infeasible ARR download file per period and stage of the allocation market.

The download file formats that are supported are CSV or XML.

2.9.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

See description in 2.5.3.

2.9.4 Sample of Private Allocation Results Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ftr="http://api.miso.org/schema/ftr/ftr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPrivateAllocationResultDownload>
      <ftr:marketName>2012 Annual Auction</ftr:marketName>
      <ftr:stageLevel>STAGE_1A</ftr:stageLevel>
      <ftr:downloadType> ALLOCATION_RESULT</ftr:downloadType>
      <ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
    </ftr:getPrivateAllocationResultDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.9.5 Sample of Private Allocation Results Download Response

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



```
<ns2:getPrivateAllocationResultDownloadResponse
xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/ftr/Common/v1">
  <ns2:return>
    <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
  </ns2:return>
</ns2:getPrivateAllocationResultDownloadResponse>
</soap:Body>
</soap:Envelope>
```

2.9.6 Sample of Private Allocation Results Download Fault Response

See a sample of fault response in 2.1.6.

2.10 Private Allocation NU Result Download

2.10.1 API Description

getPrivateAllocationNUResultDownload(Allocation Market Name, Download Type, Download File Format) is an API for retrieving the Network Upgrade (NU) allocation results for the market participant pertaining to the given market and download type. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the files in the compressed folder is in section 9 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).

2.10.2 Download Types and Download File Format for Private Allocation Network Upgrade Market Results

Currently, there is only one download type for private allocation NU market result download. The data are available after the MISO FTR Market Operator posts the results of the NU allocation market.

- **NU_RESULT** – the download file contains information regarding the results of the network upgrade nominations and their allocated MW amounts. The system creates one allocation result download file per the allocation market.

The download file formats that are supported are CSV or XML.

2.10.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

See description in 2.5.3.

2.10.4 Sample of Private Allocation NU Results Download Request



```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ftr="http://api.miso.org/schema/ftr/ftr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPrivateAllocationNUResultDownload>
      <ftr:marketName>NU Market 1 </ftr:marketName>
      <ftr:downloadType> NU_RESULT</ftr:downloadType>
      <ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
    </ftr:getPrivateAllocationNUResultDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.10.5 Sample of Private Allocation NU Results Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPrivateAllocationNUResultDownloadResponse
xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/ftr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
      </ns2:return>
    </ns2:getPrivateAllocationNUResultDownloadResponse>
  </soap:Body>
</soap:Envelope>
```

2.10.6 Sample of Private Allocation NU Results Download Fault Response

See a sample of fault response in 2.1.6.

2.11 Private Allocation RSP Result Download

2.11.1 API Description

getPrivateAllocationRSPResultDownload(Allocation Market Name, Download Type, Download File Format) is an API for retrieving allocation results for the market participant pertaining to the given market, and download type. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the files in the compressed folder is in section 9 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).



2.11.2 Download Types and Download File Format for Private Allocation RSP Market Results

Currently, there are two download types for private allocation RSP market result download. The data are available after the MISO FTR Market Operator posts the results of the RSP allocation market.

- RSP_RESULT – the download file contains information regarding RSP Nominations and their allocated MW amounts. The system creates one allocation result download file per allocation market.
- BINDING_CONSTRAINT – the download file contains binding constraints from running the given RSP allocation market. The system creates one binding constraint download file per allocation market.

The download file formats that are supported are CSV or XML.

2.11.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

See description in 2.5.3.

2.11.4 Sample of Private Allocation RSP Results Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ftr="http://api.miso.org/schema/ftr/ftr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <ftr:getPrivateAllocationRSPResultDownload>
      <ftr:marketName>RSP Market 2014</ftr:marketName>
      <ftr:downloadType>RSP_RESULT</ftr:downloadType>
      <ftr:downloadFileFormat>XML</ftr:downloadFileFormat>
    </ftr:getPrivateAllocationRSPResultDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.11.5 Sample of Private Allocation RSP Results Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPrivateAllocationRSPResultDownloadResponse
xmlns:ns2="http://api.miso.org/schema/ftr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/ftr/Common/v1">
      <ns2:return>
```



```
<xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
  </ns2:return>
</ns2:getPrivateAllocationRSPResultDownloadResponse>
</soap:Body>
</soap:Envelope>
```

2.11.6 Sample of Private Allocation RSP Results Download Fault Response

See a sample of fault response in 2.1.6.

2.12 Private Auction Result Download

2.12.1 API Description

getPrivateAuctionResultDownload(Auction Market Name, Round Level, Download Type, Download File Format) is an API for retrieving auction results for the given market participant pertaining to the given market, round level and download type. The response returns a compressed file containing the data file(s) – see a similar response sample in 2.1.5. The schema definition of the files in the compressed folder is in section 9 of Market User Interface – XML Reference document (MISO_FTR_MUI_XML_Reference_v9.0.docx).

2.12.2 Download Types and Download File Format for Private Auction Results

There are four download types for private auction market result download. The data are available after the MISO FTR Market Operator posts the results of the FTR auction.

- **AUCTION_RESULT**– the download file contains information regarding FTR buy bids/sell offers and their awarded MW amounts. Note that the field for FTR ID in this download file represents ID of the FTR awarded for the buy bid when the record type is equal to BUY. On the other hand, the FTR ID when the record type is equal to SELL represents ID of FTR offered for sale. The system creates one auction result download file per period and round of the auction market.
- **SELF_SCHEDULED_ARR** – the download file contains information regarding self-scheduled ARR. The system creates one self-scheduled ARR download file per period and round of the auction market.
- **SENSITIVITY_BID** – the download file contains sensitivities of binding constraints to PTP FTR buy bids/sell offers. The system creates one sensitivity download file per period and round of the auction market.
- **SENSITIVITY_SELF_SCHEDULED_ARR** – the download file contains sensitivities of binding constraints to self-scheduled ARR. The system creates one sensitivity download file per period and round of the auction market.

The download file formats that are supported are CSV or XML.



2.12.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault. The fault response can be due to the following fault codes.

See description in 2.6.3.

2.12.4 Sample of Private Auction Results Download Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:fttr="http://api.miso.org/schema/fttr/fttr/FtrDownload/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <fttr:getPrivateAuctionResultDownload>
      <fttr:marketName>2012 Annual Auction</fttr:marketName>
      <fttr:roundLevel>ROUND_1</fttr:roundLevel>
      <fttr:downloadType> AUCTION_RESULT </fttr:downloadType>
      <fttr:downloadFileFormat>XML</fttr:downloadFileFormat>
    </fttr:getPrivateAuctionResultDownload>
  </soapenv:Body>
</soapenv:Envelope>
```

2.12.5 Sample of Private Auction Results Download Response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns2:getPrivateAuctionResultDownloadResponse
xmlns:ns2="http://api.miso.org/schema/fttr/FtrDownload/v1"
xmlns="http://api.miso.org/schema/fttr/Common/v1">
      <ns2:return>
        <xop:Include href="cid:554e1e10-1934-466c-a622-dd31293df8ec-7@api.miso.org"
xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
      </ns2:return>
    </ns2:getPrivateAuctionResultDownloadResponse>
  </soap:Body>
</soap:Envelope>
```

2.12.6 Sample of Private Auction Results Download Fault Response

See a sample of fault response in 2.1.6.



2.13 Miscellaneous

2.13.1 Version of Web Service for FTR Download

getFtrDownloadServiceVersion() is an API used to check version number of FTR Download Web Service artifact. The response will contain the current version in <Major>.<Minor>.<Patch>.

2.13.2 Ping

ping() is an API used to check connectivity. It returns true if the service can be reached.