



Midcontinent Independent System Operator Financial Transmission Rights System

API Definitions for FTR Market Data Exchange with Midcontinent ISO Customers

Version 0.1

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1 INTRODUCTION

1.1 Revision History

Date	Version	Description	Author
08/14/2013	0.1	- Initial Version	Nexant
02/02/2015	0.2	- Added getActiveAllocationMarkets API	Nexant

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. 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
MarketSchema_v1_0.xsd	1.0.0	XML schema definitions for ARR/FTR market APIs	Nexant
MarketService_v1_0.wsdl	1.0.0	Web Service definitions for ARR/FTR market APIs	Nexant
NexantCommonStructuresSchema.xsd	1.0.0	XML schema definitions for FTR Service Exceptions and some common simpleType	Nexant

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

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 MarketService web service will consist of operation(s) that provide the necessary data to the Market Participants regarding the various Auction markets. The following operations are exposed in the MarketService web service.

2.1 Download a List of Active FTR Auction Markets

2.1.1 API Definition

getActiveAuctionMarkets() is an API for retrieving a list of auction market(s) which have been created and their last round has not been posted(completed). For example, a three-round seasonal auction is created on May 5. Its first round is open between May 7 and May 10, its round 2 is open between May 13 and May 16 and round 3 is open between May 21 and 24. The FTR market operator posts the results of the third round on May 27. This market is considered to be active between May 5 and May 27. The response, **getActiveAuctionMarketsResponse()**, will return a list of Auction Markets.

2.1.2 Schema Description

The schema descriptions in the tables 1-4 are for the market configuration.

Table 1: Market

Element Name	Element Description	Required/ Optional	Data Type
Market	Container element for a market		
name	Market name	Required	String (50 characters max)

Element Name	Element Description	Required/ Optional	Data Type
marketType	Type of market.	Required	String AUCTION
marketTerm	Term of market (SEASONAL or MONTHLY)	Required	String (50 characters max)
dataPublishDate	Timestamp when the network and market data can be published to MUI Public Downloads	Required	DateTime
products	The combination of period and time-of-use associated with the market	Required	product
rounds	Round(s) associatd with the market	Required	round

Table 2: Product

Element Name	Element Description	Required/ Optional	Data Type
product	Container element for product		
period	Effective period in the market	Required	period
tou	Time-of-use	Required	timeOfUse (PEAK or OFF-PEAK)

Table 3: Period

Element Name	Element Description	Required/ Optional	Data Type
period	Container element for a period		
periodName	Name of period	Required	String (20 characters max)
startDate	Effective start date of period	Required	DateTime
endDate	Effective end date of period	Required	DateTime

Table 4: Round

Element Name	Element Description	Required/Optional	Data Type
round	Container element for round		
level	Round identifier	Required	RoundLevel (ROUND_1, ROUND_2, ROUND_3)
openDate	Timestamp when the round is open for nomination or bid	Required	DateTime
closedDate	Timestamp when the round is closed for nomination or bid	Required	DateTime
status	Status of the round	Required	String PREP(prior to open), OPEN, CLOSED, POSTED (results of auction have been published)

2.1.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault.

2.1.4 Sample of Open Auction Market Listing Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:mar="http://api.miso.org/schema/FTR/Market/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <getActiveAuctionMarkets/>
  </soapenv:Body>
</soapenv:Envelope>
```

2.1.5 Sample of Open Auction Market Listing Response

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

```
<getActiveAuctionMarketsResponse xmlns:ns2="http://api.miso.org/schema/FTR/Common/v1"
xmlns="http://api.miso.org/schema/FTR/Market/v1">
```

```
<return>
  <name>Annual_Auction_2012</name>
  <marketType>AUCTION</marketType>
  <marketTerm>SEASONAL</marketTerm>
  <dataPublishDate>2012-04-10T13:00:00-06:00</dataPublishDate>
  <products>
    <product>
      <period>
        <periodName>Jun_12</periodName>
        <startDate>2012-06-01Z</startDate>
        <endDate>2012-07-01Z</endDate>
      </period>
      <tou>PEAK</tou>
    </product>
    <product>
      <period>
        <periodName>Jun_12</periodName>
        <startDate>2012-06-01Z</startDate>
        <endDate>2012-07-01Z</endDate>
      </period>
      <tou>OFF_PEAK</tou>
    </product>
    <product>
      <period>
        <periodName>Jul_12</periodName>
        <startDate>2012-07-01Z</startDate>
        <endDate>2012-08-01Z</endDate>
      </period>
      <tou>OFF_PEAK</tou>
    </product>
    <product>
      <period>
        <periodName>Jul_12</periodName>
        <startDate>2012-07-01Z</startDate>
        <endDate>2012-08-01Z</endDate>
      </period>
      <tou>PEAK</tou>
    </product>
  </products>
```



```

    <rounds>
      <level>ROUND_1</level>
      <openDate>2012-04-12T05:00:00.000Z</openDate>
      <closedDate>2012-04-13T04:00:00.000Z</closedDate>
      <status>OPEN</status>
    </rounds>
  </return>
</getActiveAuctionMarketsResponse>
</soapenv:Body>
</soapenv:Envelope>

```

2.2 Download a List of Posted FTR Auction Markets

2.2.1 API Definition

getPostedAuctionMarkets() is an API for retrieving a list of posted auction market(s). An Auction market is considered posted when all of round(s) in the auction are completed and the results are posted by the MISO FTR market operator. The response, **getPostedAuctionMarketsResponse()**, will return a list of posted auction markets.

2.2.2 Schema Description

See the schema descriptions in the tables 1-4 in section 2.1.2.

2.2.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault.

2.2.4 Sample of Posted Auction Market Listing Request

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:mar="http://api.miso.org/schema/FTR/Market/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <getPostedAuctionMarkets/>
  </soapenv:Body>
</soapenv:Envelope>

```

2.2.5 Sample of Posted Auction Market Listing Response

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" >
  <soapenv:Body>
    <getPostedAuctionMarketsResponse xmlns:ns2="http://api.miso.org/schema/FTR/Common/v1"
      xmlns="http://api.miso.org/schema/FTR/Market/v1">

```

```

<return>
  <name>Monthly_May_Auction_2012</name>
  <marketType>AUCTION</marketType>
  <marketTerm>MONTHLY</marketTerm>
  <dataPublishDate> 2013-08-05T05:00:00.000Z</dataPublishDate>
  <products>
    <product>
      <period>
        <periodName>Jun_12</periodName>
        <startDate>2012-06-01Z</startDate>
        <endDate>2012-07-01Z</endDate>
      </period>
      <tou>PEAK</tou>
    </product>
    <product>
      <period>
        <periodName>Jun_12</periodName>
        <startDate>2012-06-01Z</startDate>
        <endDate>2012-07-01Z</endDate>
      </period>
      <tou>OFF_PEAK</tou>
    </product>
    <product>
      <period>
        <periodName>Jul_12</periodName>
        <startDate>2012-07-01Z</startDate>
        <endDate>2012-08-01Z</endDate>
      </period>
      <tou>OFF_PEAK</tou>
    </product>
    <product>
      <period>
        <periodName>Jul_12</periodName>
        <startDate>2012-07-01Z</startDate>
        <endDate>2012-08-01Z</endDate>
      </period>
      <tou>PEAK</tou>
    </product>
  </products>
  <rounds>
    <level>ROUND_1</level>
  </rounds>

```

```

    <openDate>2012-04-12T00:00:00-06:00</openDate>
    <closedDate>2012-04-13T17:00:00-06:00</closedDate>
    <status>OPEN</status>
  </rounds>
</return>
</getPostedAuctionMarketsResponse>
</soapenv:Body>
</soapenv:Envelope>

```

2.3 Download Information of a Market

2.3.1 API Definition

getMarketInfo(Market Name) is an API for retrieving a configuration and information of a market from a given market name. The response, **getMarketInfoResponse()**, will return a Market.

2.3.2 Schema Description

See the schema descriptions in the tables 1-4 in section 2.1.2.

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 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.

2.3.4 Sample of Market Information Request

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:mar="http://api.miso.org/schema/FTR/Market/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <getMarketInfo>
      <marketName>SEASONAL_Auction_2012</marketName>
    </getMarketInfo>
  </soapenv:Body>
</soapenv:Envelope>

```

2.3.5 Sample of Auction Market Listing Response

```

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

```

```

<getMarketInfoResponse xmlns:ns2="http://api.miso.org/schema/FTR/Common/v1"
xmlns="http://api.miso.org/schema/FTR/Market/v1">
  <return>
    <name>SEASONAL_Auction_2012</name>
    <marketType>AUCTION</marketType>
    <marketTerm>MONTHLY</marketTerm>
    <dataPublishDate>2012-04-10T13:00:00-06:00</dataPublishDate>
    <products>
      <product>
        <period>
          <periodName>Jun_12</periodName>
          <startDate>2012-06-01Z</startDate>
          <endDate>2012-07-01Z</endDate>
        </period>
        <tou>PEAK</tou>
      </product>
      <product>
        <period>
          <periodName>Jun_12</periodName>
          <startDate>2012-06-01Z</startDate>
          <endDate>2012-07-01Z</endDate>
        </period>
        <tou>OFF_PEAK</tou>
      </product>
      <product>
        <period>
          <periodName>Jul_12</periodName>
          <startDate>2012-07-01Z</startDate>
          <endDate>2012-08-01Z</endDate>
        </period>
        <tou>OFF_PEAK</tou>
      </product>
      <product>
        <period>
          <periodName>Jul_12</periodName>
          <startDate>2012-07-01Z</startDate>
          <endDate>2012-08-01Z</endDate>
        </period>
        <tou>PEAK</tou>
      </product>
    </products>
  </rounds>

```

```

    <level>ROUND_1</level>
    <openDate>2012-04-12T00:00:00-06:00</openDate>
    <closedDate>2012-04-13T17:00:00-06:00</closedDate>
    <status>OPEN</status>
  </rounds>
</return>
</getMarketInfoResponse>
</soapenv:Body>
</soapenv:Envelope>

```

2.4 Download Round Status of a Market

2.4.1 API Definition

getMarketRoundStatus(Market Name, Round identifier) is API is for retrieving the status of a round of a market. Its more of a convenience API and the same information can be retrieved from the getMarketInfo() API call.

2.4.2 Schema Description

See the schema descriptions in the tables 1-4 in section 2.1.2.

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 name may be misspelled or the market has not been created 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 associated with the market 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. If an auction has only one round; then ROUND_2 and ROUND_3 are not applicable to the auction.

2.4.4 Sample of Market Round Status Request

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:mar="http://api.miso.org/schema//FTR/Market/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <getMarketRoundStatus>
      <marketName>SEASONAL_Auction_2012</marketName>
      <level>ROUND_1</level>
    </getMarketRoundStatus>
  </soapenv:Body>

```

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

2.4.5 Sample of Market Round Status Response

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" >
  <soapenv:Body>
    <getMarketRoundStatusResponse xmlns:ns2="http://api.miso.org/schema/FTR/Common/v1"
xmlns="http://api.miso.org/schema/FTR/Market/v1">
      <return>OPEN</return>
    </getMarketRoundStatusResponse>
  </soapenv:Body>
</soapenv:Envelope>
```

2.5 Download a List of Active FTR Allocation Markets

2.1.1 API Definition

getActiveAllocationMarkets() is an API for retrieving a list of allocation market(s) which have been created and their last round has not been posted(completed). For example, a three-round seasonal allocation is created on May 5. Its first round (stage 1A) is open between May 7 and May 10, its round 2 (restoration stage) is open between May 13 and May 16 and round 3 is open between May 21 and 24. The FTR market operator posts the results of the third round on May 27. This market is considered to be active between May 5 and May 27. The response, **getActiveAllocationMarketsResponse()**, will return a list of Allocation Markets.

2.1.2 Schema Description

The schema descriptions in the tables 1-4 are for the market configuration.

Table 1: Market

Element Name	Element Description	Required/Optional	Data Type
Market	Container element for a market		
name	Market name	Required	String (50 characters max)
marketType	Type of market.	Required	String AUCTION

Element Name	Element Description	Required/ Optional	Data Type
marketTerm	Term of market (SEASONAL or MONTHLY)	Required	String (50 characters max)
dataPublishDate	Timestamp when the network and market data can be published to MUI Public Downloads	Required	DateTime
products	The combination of period and time-of-use associated with the market	Required	product
rounds	Round(s) associatd with the market	Required	round

Table 2: Product

Element Name	Element Description	Required/ Optional	Data Type
product	Container element for product		
period	Effective period in the market	Required	period
tou	Time-of-use	Required	timeOfUse (PEAK or OFF-PEAK)

Table 3: Period

Element Name	Element Description	Required/ Optional	Data Type
period	Container element for a period		
periodName	Name of period	Required	String (20 characters max)
startDate	Effective start date of period	Required	DateTime
endDate	Effective end date of period	Required	DateTime

Table 4: Round

Element Name	Element Description	Required/Optional	Data Type
round	Container element for round		
level	Round identifier	Required	RoundLevel (ROUND_1, ROUND_2, ROUND_3)
openDate	Timestamp when the round is open for nomination or bid	Required	DateTime
closedDate	Timestamp when the round is closed for nomination or bid	Required	DateTime
status	Status of the round	Required	String PREP(prior to open), OPEN, CLOSED, POSTED (results of auction have been published)

2.1.3 Fault Response

SOAP fault will contain the fault code, fault string and detail of the fault.

2.1.4 Sample of Active Allocation Market Listing Request

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:mar="http://api.miso.org/schema/FTR/Market/v1">
  <soapenv:Header/>
  <soapenv:Body>
    <getActiveAllocationMarkets/>
  </soapenv:Body>
</soapenv:Envelope>
```

2.1.5 Sample of Open Allocation Market Listing Response

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



```
<getActiveAllocationMarketsResponse xmlns:ns2="http://api.miso.org/schema/ptr/Common/v1"
xmlns="http://api.miso.org/schema/ptr/Market/v1">
```

```
<return>
  <name>Winter2014Allocation_Nexant</name>
  <marketType>ALLOCATION</marketType>
  <marketTerm>SEASONAL</marketTerm>
  <dataPublishDate>2014-09-21T05:00:00.000Z</dataPublishDate>
  <products>
    <product>
      <period>
        <periodName>Win14</periodName>
        <startDate>2014-12-01Z</startDate>
        <endDate>2015-03-01Z</endDate>
      </period>
      <tou>PEAK</tou>
    </product>
    <product>
      <period>
        <periodName>Win14</periodName>
        <startDate>2014-12-01Z</startDate>
        <endDate>2015-03-01Z</endDate>
      </period>
      <tou>OFF-PEAK</tou>
    </product>
  </products>
  <rounds>
    <round>
      <level>ROUND_1</level>
      <openDate>2014-09-25T01:00:00.000Z</openDate>
      <closedDate>2014-09-26T21:59:59.000Z</closedDate>
      <status>POSTED</status>
    </round>
    <round>
      <level>ROUND_2</level>
      <openDate>2014-09-27T13:00:00.000Z</openDate>
      <closedDate>2014-09-28T21:59:59.000Z</closedDate>
      <status>POSTED</status>
    </round>
    <round>
      <level>ROUND_3</level>
      <openDate>2014-09-29T13:00:00.000Z</openDate>
```

```
<closedDate>2014-10-25T21:59:59.000Z</closedDate>
<status>CLOSED</status>
</round>
</rounds>
</return>
</getActiveAllocationMarketsResponse>
</soap:Body>
</soap:Envelope>
```

2.6 Miscellaneous

2.6.1 Retrieval of Market Service Version

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

2.6.2 Ping

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