

Implementation Guide for TOPNIVEAU and BOSS applications

Implementation Guide for MARS/PICASSO Project TOPNIVEAU and BOSS Applications

Implementation Guide for TOPNIVEAU and BOSS applications

Revision history		
27/09/2019	V0.1	Initial version
05/02/2020	V0.2	<p>Changed the rules for creating bids</p> <p>Added an explanation for the transition between summer and winter time</p> <p>Added a paragraph on ACKs (§ 4.2.7)</p> <p>Added a paragraph on APIs (§4.4)</p>
17/07/2020	V0.3	<p>Added TOPNIVEAU URLs for HMI (§2.4) and M2M (§2.5)</p> <p>Modified expected values in the bid document (provider_MarketParticipant.mRID, price_Measure_Unit.name, gammes de prix, marketProductType, *MarketParticipant.mRID...)</p> <p>Added example files § 4.2.2.</p> <p>Added the list of bids API description § 4.2.2.</p> <p>Corrected typos and reformulations</p> <p>Update to Table 2: List of errors on a document and associated ACK</p>
12/05/2021	V0.4	<p>Changed the scope of the implementation guide: addition of the Back Office part (BOSS application)</p> <p>Version with correction after the 1st market participant test session.</p> <p>Modified the URLs of APIs</p> <p>RPG label with 10 characters maximum and bid ID with 5 characters maximum</p> <p>Added §4.2.5 on bid volumes with decimals</p> <p>Deleted closed status at H-25 min §4.2.8</p> <p>Added the presentation of the BOSS application §1.1.2</p> <p>Added application access prerequisites §2.2</p> <p>Added the M2M interface of BOSS §3.2.1</p> <p>Added the specifications of the BOSS API §5</p> <p>Modified the API BOSS request §5.2</p> <p>Modified the API BOSS response §5.3</p> <p>Modified the API BOSS response: Added revision_number §5.3</p> <p>Added the date_type field in the API BOSS request §5.2</p> <p>Added the remuneration price in the API BOSS request §5.3</p> <p>Amended the BOSS API management rules §5.4</p>
07/12/2021	V0.5	<p>Added paragraph 2.7 on rules and good practices</p> <p>§3.3 Added diagram</p>

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		Modified checks on ramp and Figure 3 (§ 4.2.1). §4.2.11 and §4.4.6: description of the pro rata mode. Added API BOSS pagination procedure (§ 5.4)
29/03/2022	V0.6	Replaced the term "ramp" with "FAT" §2. Added URLs of different test environments and test BOSS URLs § 4.2.8 Amended the diagram of the lifecycle of documents and bids
11/04/2022	V0.7	Changed the URL for the test BOSS API.

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1 General provisions

1.1 MARS/PICASSO project

The MARS (*Marché d'Activation de la Réserve Secondaire* automatic Frequency Restoration Reserve Activation Market) project is the application of the European PICASSO project (Platform for the International Coordination of Automated Frequency Restoration and Stable System Operation) for the exchange of **aFRR energy bids**. This project will allow the implementation of an energy market for the activation of automatic Frequency Restoration Reserve in France and the exchange of bids at European level. This project is closely linked to the project for the evolution of the RTE SCADA towards a solution which will allow real-time merit order activation and the transmission of an activation request signal to reserve providing groups participating in automatic Frequency Restoration Reserve

The MARS project has brought about the creation of two new applications by RTE:

- 1) TOPNIVEAU: front office for aFRR energy bid submissions
- 2) BOSS: for back office aspects.

1.1.1 Presentation of the TOPNIVEAU application

The application constitutes the RTE Front-Office for the submission of aFRR energy bids by market participants, as "Reserve Providers" RP and having aFRR capacities certified by RTE. The application performs the following main processes:

- receipt and verification of bids submitted;
- management of missing bids;
- choice of bids according to the final dispatch schedule;
- sequencing according to merit order;
- transmission to RTE SCADA for activation
- transmission to the European PICASSO platform for exchange;
- publication of the private information of market participants regarding the bids submitted.

1.1.2 Presentation of the BOSS application

The aim of the BOSS application, "*Back Office Services Système*", is to calculate and settle automatic frequency restoration reserve energies per RPG in the context of the evolution of the SCADA RTE and the merit order activation of automatic frequency restoration reserve. BOSS will retrieve the bid and Level information per reserve providing group, in 4-second intervals, and calculate the energies and settlement prices of each RPG, then aggregate these data at 5-minute intervals to transmit it to the applications requiring this information for publications and for determining the settlement of market participants.

1.2 Purpose of document

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This document is intended for users external to RTE of TOPNIVEAU and BOSS applications, Reserve Providers (RP) with certified automatic Frequency Restoration Reserve capacities. The document has two objectives that depend on the progress of the project:

- Firstly: to provide market participants with visibility on how to use the applications and enable them to prepare the sending of energy bids and the retrieval of back-office information;
- After production: to track the evolutions impacting the interface with external market participants.

This document is an integral part of the Frequency Ancillary Services IS Terms and Conditions [1] and:

- defines the transmission process of automatic Frequency Restoration Reserve energy bids associated with the application;
- presents the technical set of rules required for using the application.

1.3 Reference documents

The table below lists the reference documents cited in this implementation guide.

No.	Title of document	Source
[1]	Frequency Ancillary Services Terms and Conditions	https://www.services-rte.com/fr/decouvrez-nos-offres-de-services/fournir-des-services-systeme-frequence.html
[2]	Rules for access to the RTE IS for frequency ancillary services	https://www.services-rte.com/fr/decouvrez-nos-offres-de-services/fournir-des-services-systeme-frequence.html
[3]	PKI Software Certificate User Manual	http://clients.rte-france.com/lang/fr/visiteurs/accueil/portail.jsp
[4]	ENTSO-E European style market profile (ESMP) documents	ENTSO-E site containing document templates and List codes https://www.entsoe.eu/publications/electronic-data-interchange-edi-library/
[5]	ENTSO-E ReserveBidDocument	Bid document XSD https://www.entsoe.eu/Documents/EDI/Library/CIM_xsd_package.zip
[6]	ENTSO-E Acknowledgement document	XSD of ACK files https://www.entsoe.eu/Documents/EDI/Library/CIM_xsd_package.zip

2 RTE IS access.

The general conditions for access to the RTE IS are defined by the information system access terms and conditions and the terms of use of access to RTE applications (see document on RTE IS access rules for frequency ancillary services [2])

2.1 TOPNIVEAU Application

The TOPNIVEAU application is accessible via the RTE Front Office.

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The RTE Front Office is all of the computer resources made available by RTE, allowing access to its IS and to the Applications.

Access to generic applications (TOPNIVEAU for example) is requested through a form:

<https://www.services-rte.com/fr/home.html>

2.2 Prerequisites

To access the TOPNIVEAU application via HMI or M2M, RPs must:

- have a valid PKI certificate;
- add the existing certificate to the TOPNIVEAU application.
- hold a valid participation agreement as RP.
- To gain access to the BOSS application Reserve Providers must: Have a valid PKI certificate for the VESPA application (allowing access to BOSS). A PKI certificate will be required for the tests and another certificate will be required for production. The same certificate can be used for both TOPNIVEAU and BOSS access (via VESPA).
- Be subscribed to the VESPA API which for the preproduction requires sending an email to rte-projet-mars@rte-france.com and for the production according to the normal procedure. See [FAQ - API Data RTE \(rte-france.com\)](#)
- Hold a valid participation agreement as Reserve Providers.

2.3 Obtaining a PKI certificate

To use the Web HMI interface of the TOPNIVEAU and BOSS application, a RP must submit a request with their account manager. The use of PKIs at RTE is described on the webpage [PKI RTE \(rte-france.com\)](#). Following this request, an electronic key to connect to the RTE IS (PKI certificate) is provided to the RP. This key must be installed according to the procedures described in the reference document [3].

2.4 Connection to the Web HMI

The Web HMI interface of the TOPNIVEAU application is accessible with a Web browser, with an electronic key connection to RTE IS, at the following URL:

Environment	Connection URL
Fully interconnected test environment	https://secure-apps-dev.iservices.rte-france.com/topniveau-pfrfi1
Sandbox test environment	https://secure-apps-metier.iservices.rte-france.com/topniveau-pfrfi2/
Production environment	https://secure-apps.iservices.rte-france.com/topniveau/

The Web HMI of the TOPNIVEAU application is for "light users". More specifically, Web pages can be viewed with the Edge browser (Chromium version).

2.5 Connection via M2M (TOPNIVEAU API)

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The TOPNIVEAU application is accessible through M2M, with an electronic key connection to RTE IS, at the following URL:

Environment	Connection URL
Fully interconnected test environment	https://secure-apps-dev.iservices.rte-france.com/topniveau-pfrfi1-api/
Sandbox test environment	https://secure-apps-metier.iservices.rte-france.com/topniveau-pfrfi2-api/
Production environment	https://secure-apps.iservices.rte-france.com/topniveau-api/

2.6 Connection via M2M (BOSS API)

The BOSS application is accessible by M2M:

Environment	Connection URL
Fully interconnected test environment	https://digital-dev.iservices.rte-france.com/pki/aFRR_reserve/v1/activated_aFRR_per_entity
Sandbox test environment	Does not exist
Production environment	later

2.7 Rules and best practices for the use of IS

The proper functioning of applications also depends on their use. The number of API requests and the volume of data requested significantly affect performance. The best use practices to be applied are outlined below:

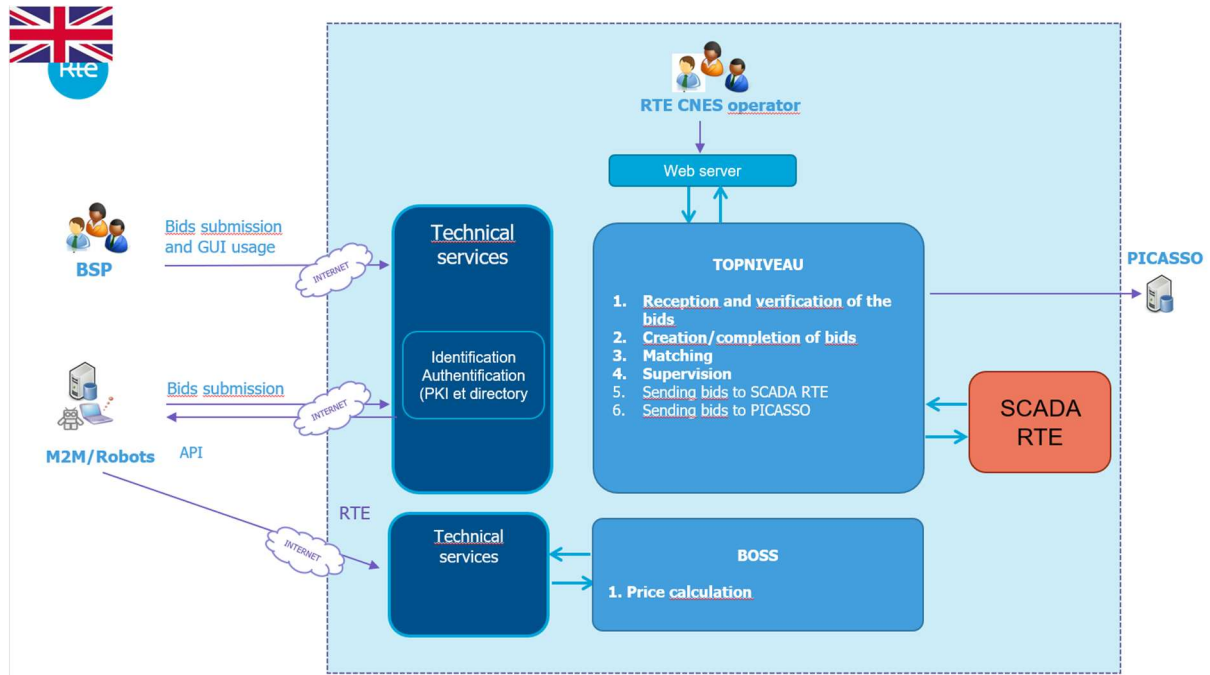
- TOPNIVEAU
 - Transmit bid redeclarations intraday (see §4.4.3), at reasonable frequencies: A redeclaration every 15 minutes maximum just before H-25 min is sufficient to meet the need for redeclaration close to real time;
 - Transmit bid redeclarations intraday with reasonable depths: The transmission of 1 to 4 validity periods intraday seems reasonable;
 - To find the ACK associated with a document submission (see § 4.4.5), the TOPNIVEAU API should be requested after a reasonable time following submission and to avoid too frequent retries;
 - Concerning the API of matched bids, RTE recommends avoiding requesting this API too frequently or in a too high number of time intervals (see §4.4.6).
- BOSS

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- Concerning the energy and settlement API, the latest resubmissions should not be requested too frequently (see 'UPDATE' §**Erreur ! Source du renvoi introuvable**.mode);

These recommendations can be specified and quantified when interconnected performance tests have been performed and the performance of the TOPNIVEAU and BOSS applications is known.

3 Design of TOPNIVEAU and BOSS applications



3.1 TOPNIVEAU interface

For a RP, there are two interface solutions with the TOPNIVEAU application:

3.1.1 A "Web HMI" interface:

The RP can perform the following operations:

- Submit a bid document;
- View the bid log;
- View the events log;
- View the bid volume.

The details are presented in paragraph 4.3.

3.1.2 A "Machine to Machine" interface (M2M)

This interface can be used by all of the RPs via the TOPNIVEAU API consultation.

This interface is technically made up of the following services:

- submit a bid document;
- view the status of a document;

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- view the bid acknowledgments (ACK);
- view the list of bids, their status and the final dispatch schedule used to develop the selected aFRR bid.

Limits in terms of the frequency of requests or the volume of data exchanged may be fixed in order to guarantee the performance of the TOPNIVEAU application.

3.2 BOSS interface

3.2.1 A "Machine to Machine" interface (M2M)

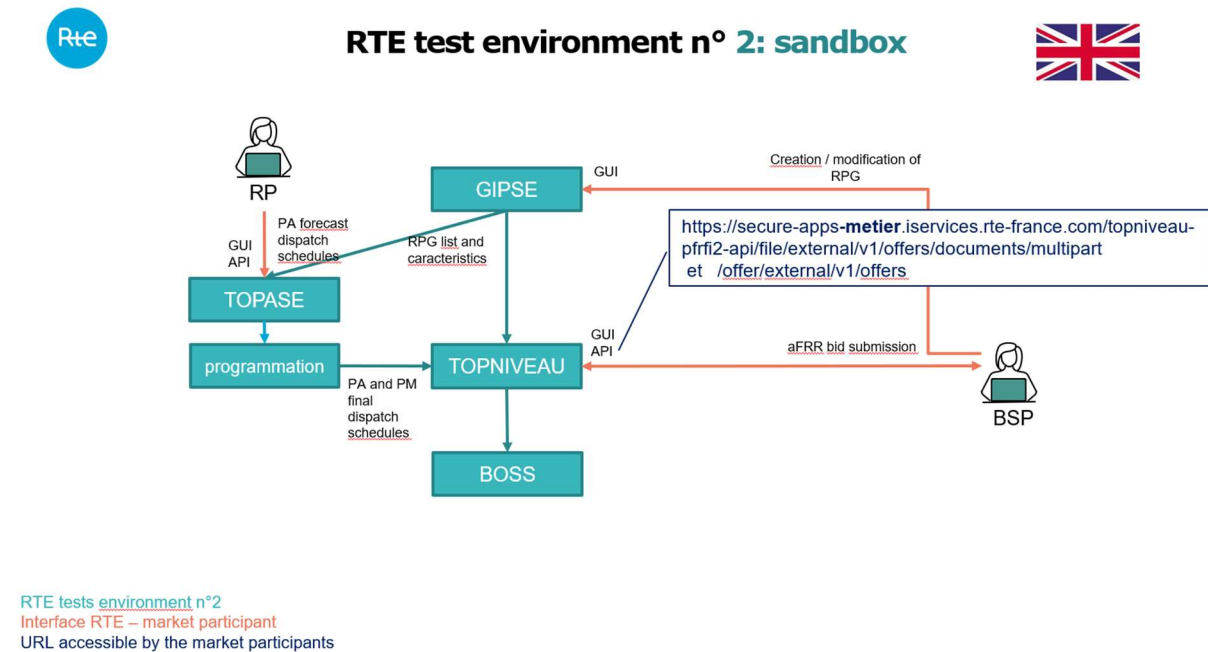
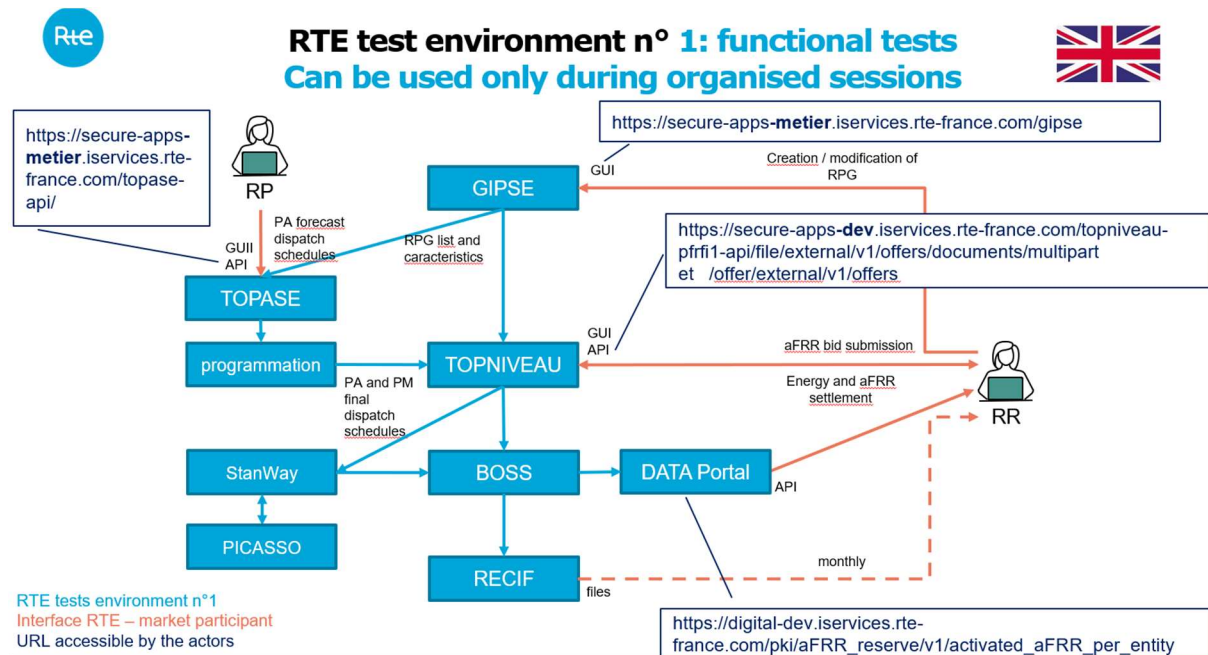
This interface can be used by all of the RPs via the BOSS API consultation.

The API will allow access to the data calculated by BOSS for a desired period of time. For each request, the API will respond, for one RPG at the selected time period, with a list of values for a 5-minute interval containing:

- Upward energy in MWh
- Downward energy in MWh
- Upward volume weighted average settlement price in €/MWh
- Downward volume weighted average settlement price in €/MWh
- Upward settlement in €
- Downward settlement in €

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3.3 RTE planning and test environments



Note that the settlement data provided by BOSS via VESPA is not accessible on this environment.

4 Bid submission

4.1 Description of a bid

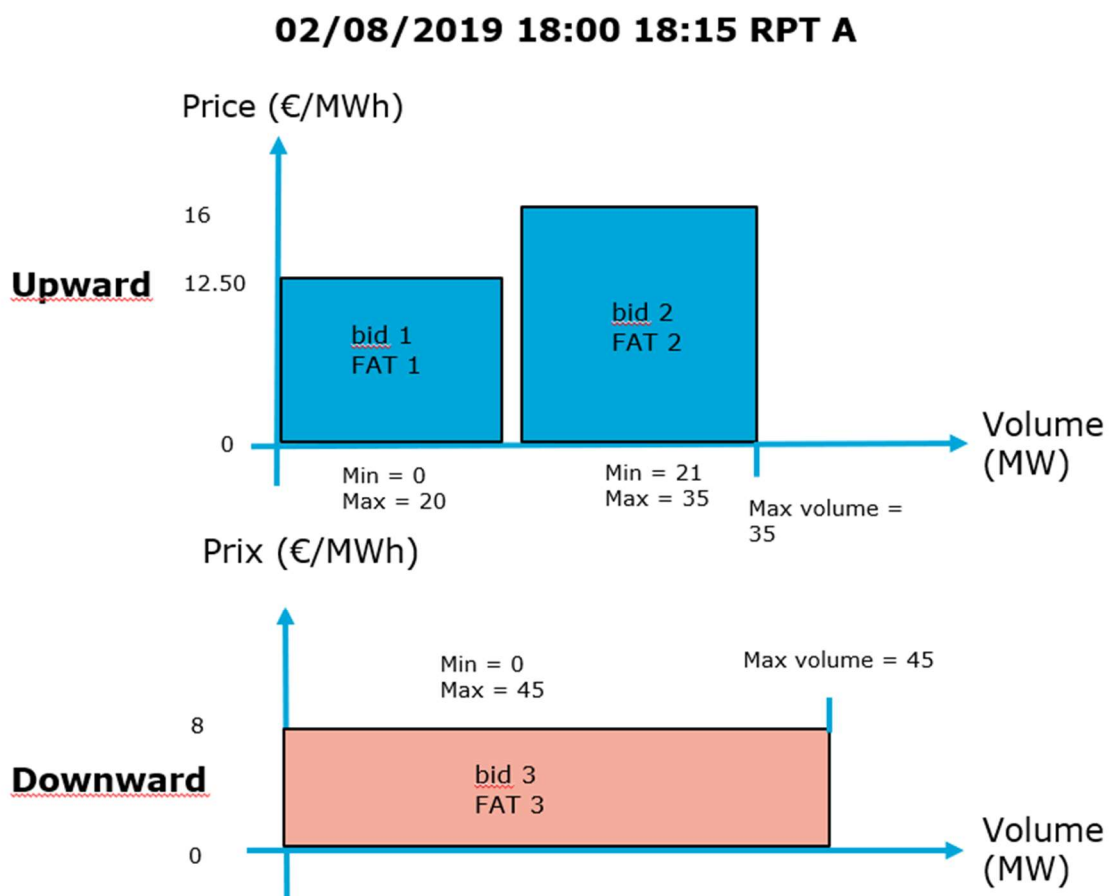
aFRR bids are described in the Frequency Ancillary Services Terms and Conditions (reference [1]).

A bid must contain the following:

- A RPG;
- A validity period of 15 minutes;
- An activatable volume range (MW): this is the minimum and maximum range associated with a price bid;
- The price corresponding to this volume (in €/MWh);
- An FAT (in seconds): the maximum duration to go from 0 to the volume offered;
- A direction (upward or downward).

For each RPG and each validity period, a price must be given by the RP for each volume range. In practice, volume ranges may be assigned the same price.

Figure 1: Diagram representing bids for different volumes for a given RPG and validity period



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For bid 3 at the price €8/MWh, minimum_Quantity = 0 MW and Quantity = 45 MW.

4.2 ENTSO-E automatic Frequency Restoration Reserve bid document

The reserve bid document submitted is in XML format and must respect the following ENTSO-E specification ([5]):

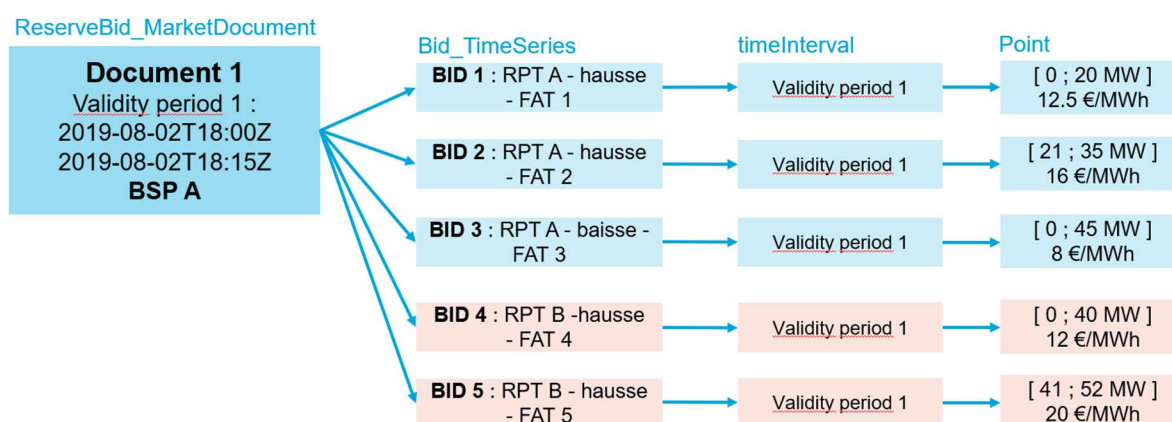
Reserve bid document	iec62325-451-7-reservebiddocument_v7_1.xsd
-----------------------------	---

Bids for a given validity period will be transmitted in **linked form** (multi-bid document). Each bid is expressed in 15-minute intervals.

A RP will therefore transmit a single document to RTE including all of its bids at 15-minute intervals over the desired period for all its RPGs and for the certified aFRR volume.

The diagram below illustrates the structure of the bid document and the name of the tags defined by the XSD:

Figure 2 : Diagram representing the structure of the bid document



For a bid, definition of a minimum and a maximum volume that defines the limits at which the bid price will be retained.

The minimum_Quantity and Quantity of the reservebiddocument document fields (presented in Contents of a bid document

Table 1: Expected content and checks carried out on the bid documents

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XML document tags	Description, checks and example	Mandatory / Optional (XSD and TOPNIVEAU requirement)
Document header level: ReserveBid_MarketDocument		
mRID	Document ID See paragraph 4.2.2 header check eg.: AFRR_20190802_1800_1815_RR	Mandatory
revisionNumber	Version number of the document Must be integer Must be incremented each time it is sent for the same validity period (possible value jump)	Mandatory
type	A37 (ENTSO-E definition: reserve bid document)	Mandatory
process.processType	A51 (ENTSO-E definition: aFRR)	Mandatory
sender_MarketParticipant.mRID codingScheme="A01" (EIC code)	EIC code of the BRP market participant sending the bids Must correspond to the company the user is connected to e.g.: 17X100A100F0076X	Mandatory
sender_MarketParticipant.marketRole.type	A46 (ENTSO-E definition: Balancing Service Provider)	Mandatory
receiver_MarketParticipant.mRID codingScheme="A01" (EIC code)	RTE EIC Code, bid receiver 10XFR-RTE-----Q	Mandatory
receiver_MarketParticipant.marketRole.type	A04 (ENTSO-E definition: System Operator)	Mandatory
createdDateTime	Date and time of creation of document Must be in UTC format (ISO 8601 standard) YYYY-MM-DDTHH:MM:SSZ	Mandatory
reserveBid_Period.timeInterval	Start date and end date of the validity period of the bids in the start file YYYY-MM-DDTHH:MMZ end YYYY-MM-DDTHH:MMZ Must be in UTC format (ISO 8601 standard) Must be 15 minutes Must be between D and D+7 Must be before H-25 min if submitted on day D Must start at: 00, 15, 30 or 45 of each hour. e.g.: <start>2019-08-09T18:00Z</start> <end>2019-08-09T18:15Z </end>	Mandatory
domain.mRID codingScheme="A01" (code EIC)	France EIC code must be 10YFR-RTE-----C	Mandatory

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subject_MarketParticipant.mRID codingScheme="A01" (code EIC)	Must be the EIC code of the market participant the bids relate to The market participant must have a participation agreement as reserve provider <i>e.g.: 17X100A100F0076X</i>	Mandatory
subject_MarketParticipant.marketRole.type	A46 (ENTSO-E definition: Balancing Service Provider)	Mandatory

Bid level: Bid_TimeSeries		
mRID	Bid ID Format check see paragraph 4.2.2 <i>e.g.: AFRR_20190802_1800_UNIT 01_10</i>	Mandatory
auction.mRID	Identifies the aFRR bid as an aFRR auction AUCTION-aFRR	Mandatory
businessType	B74 (ENTSO-E definition: bid)	Mandatory
acquiring_Domain.mRID codingScheme="A01" (code EIC) (code EIC)	EIC France 10YFR-RTE-----C	Mandatory
connecting_Domain.mRID codingScheme="A01" (code EIC) (code EIC)	EIC France 10YFR-RTE-----C	Mandatory
provider_MarketParticipant.mRID codingScheme="A01" (code EIC) (code EIC)	Not used	Optional
quantity_Measure_Unit.name	MAW	Mandatory
currency_Unit.name	EUR	Mandatory (TOPNIVEAU check)
price_Measure_Unit.name	Not used	Optional
divisible	Divisibility of the bid volume A01 divisible, the amount of aFRR can be reduced to the minimum quantity in StepIncrementQuantity increments	Mandatory
linkedBidsIdentification	Not used	Optional
multipartBidIdentification	Not used	Optional
exclusivesBidIdentification	Not used	Optional
blockBid	Not used	Optional
status	Not used	Optional
priority	Not used	Optional

must therefore be filled in.

A RP can perform "redeclarations of bids", i.e.: to return a document in order to amend the bids of a previously sent document. In this case, the cancel and replace logic applies: all bids from all previous RPGs become obsolete.

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The following table shows the fields that make up the bid document and indicates the mandatory tags and values (by XSD or functionally required by TOPNIVEAU). The checks are also detailed for each field: the expected value is indicated in bold.

The codes described below are based on the document "ENTSO-E codelists version 66" (reference [4]). This document describes the codes (e.g. A01, B37...) used in the XML documents described in the CIM.

4.2.1 Contents of a bid document

Table 1: Expected content and checks carried out on the bid documents

Implementation Guide for TOPNIVEAU and BOSS applications

XML document tags	Description, checks and example	Mandatory / Optional (XSD and TOPNIVEAU requirement)
Document header level: ReserveBid_MarketDocument		
mRID	Document ID See paragraph 4.2.2 header check eg.: AFRR_20190802_1800_1815_RR	Mandatory
revisionNumber	Version number of the document Must be integer Must be incremented each time it is sent for the same validity period (possible value jump)	Mandatory
type	A37 (ENTSO-E definition: reserve bid document)	Mandatory
process.processType	A51 (ENTSO-E definition: aFRR)	Mandatory
sender_MarketParticipant.mRID codingScheme="A01" (EIC code)	EIC code of the BRP market participant sending the bids Must correspond to the company the user is connected to e.g.: 17X100A100F0076X	Mandatory
sender_MarketParticipant.marketRole.type	A46 (ENTSO-E definition: Balancing Service Provider)	Mandatory
receiver_MarketParticipant.mRID codingScheme="A01" (EIC code)	RTE EIC Code, bid receiver 10XFR-RTE-----Q	Mandatory
receiver_MarketParticipant.marketRole.type	A04 (ENTSO-E definition: System Operator)	Mandatory
createdDateTime	Date and time of creation of document Must be in UTC format (ISO 8601 standard) YYYY-MM-DDTHH:MM:SSZ	Mandatory
reserveBid_Period.timeInterval	Start date and end date of the validity period of the bids in the start file YYYY-MM-DDTHH:MMZ end YYYY-MM-DDTHH:MMZ Must be in UTC format (ISO 8601 standard) Must be 15 minutes Must be between D and D+7 Must be before H-25 min if submitted on day D Must start at: 00, 15, 30 or 45 of each hour. e.g.: <start>2019-08-09T18:00Z</start> <end>2019-08-09T18:15Z </end>	Mandatory
domain.mRID codingScheme="A01" (code EIC)	France EIC code must be 10YFR-RTE-----C	Mandatory

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subject_MarketParticipant.mRID codingScheme="A01" (code EIC)	Must be the EIC code of the market participant the bids relate to The market participant must have a participation agreement as reserve provider <i>e.g.: 17X100A100F0076X</i>	Mandatory
subject_MarketParticipant.marketRole.type	A46 (ENTSO-E definition: Balancing Service Provider)	Mandatory

Bid level: Bid_TimeSeries		
mRID	Bid ID Format check see paragraph 4.2.2 <i>e.g.: AFRR_20190802_1800_UNIT 01_10</i>	Mandatory
auction.mRID	Identifies the aFRR bid as an aFRR auction AUCTION-aFRR	Mandatory
businessType	B74 (ENTSO-E definition: bid)	Mandatory
acquiring_Domain.mRID codingScheme="A01" (code EIC) (code EIC)	EIC France 10YFR-RTE-----C	Mandatory
connecting_Domain.mRID codingScheme="A01" (code EIC) (code EIC)	EIC France 10YFR-RTE-----C	Mandatory
provider_MarketParticipant.mRID codingScheme="A01" (code EIC)" (code EIC)	Not used	Optional
quantity_Measure_Unit.name	MAW	Mandatory
currency_Unit.name	EUR	Mandatory (TOPNIVEAU check)
price_Measure_Unit.name	Not used	Optional
divisible	Divisibility of the bid volume A01 divisible, the amount of aFRR can be reduced to the minimum quantity in StepIncrementQuantity increments	Mandatory
linkedBidsIdentification	Not used	Optional
multipartBidIdentification	Not used	Optional
exclusivesBidIdentification	Not used	Optional
blockBid	Not used	Optional
status	Not used	Optional
priority	Not used	Optional

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registeredResource.mRID codingScheme="NFR"	RPG code (max 10 characters) The RPG must be certified in automatic Frequency Restoration Reserve The RPG must belong to the RP's perimeter.	Mandatory (TOPNIVEAU check)
flowDirection.direction	Direction A01 : if upward A02 : if downward	Mandatory TOPNIVEAU check
stepIncrementQuantity	Mandatory If divisible = A01 The increment intervals are 1 MW	Conditional
energyPrice_Measure_Unit.name	MWH	Mandatory (TOPNIVEAU check)
marketAgreement.type	<i>Not used</i>	Optional
marketAgreement.mRID	<i>Not used</i>	Optional
marketAgreement.createdDateTime	<i>Not used</i>	Optional
activation_ConstraintDuration.duration	FAT of the bid in seconds Must be less than or equal to the regulatory FAT of 400 seconds (will be 300 s from 18/12/2024) Must be greater than the certified maximum FAT (see e.g. Figure 3). Must be in ISO_8601 format <i>e.g.: PT300S or PT5M</i>	Mandatory (TOPNIVEAU check)
resting_ConstraintDuration.duration	<i>Not used</i>	Optional
minimum_ConstraintDuration.duration	<i>Not used</i>	Optional
maximum_ConstraintDuration.duration	<i>Not used</i>	Optional
standard_MarketProduct.marketProductType	<i>Not used</i>	Optional
original_MarketProduct.marketProductType	<i>Not used</i>	Optional
validity_Period.timeInterval	Period over which the bid can be activated <i>Not used</i>	Optional
Validity period level: Period	Description, checks and example	Mandatory / Optional
timeInterval	Start date and end date of the validity period of the bids Must be in UTC format (ISO 8601 standard) Must be consistent with the same information in the header (reserveBid_Period.timeInterval) start YYYY-MM-DDTHH:MMZ end YYYY-MM-DDTHH:MMZ <i>e.g.: 2019-08-02T18:00Z</i>	Mandatory
resolution	The duration of the validity period must be 15 minutes PT15M Must be in ISO_8601 format	Mandatory

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Point		
position	Only one bid possible for a validity period. 1	Mandatory
quantity.quantity	Maximum volume of the range offered The volume must be a strictly positive integer. The volume must be less than or equal to the certified volume of the RPG. The volumes between the different bids must be disjointed.	Mandatory
minimum_Quantity.quantity	Minimum volume of the range offered The minimum volume must be less than or equal to the volume (quantity.quantity)	Mandatory
price.amount	Price for activation Not used	Optional
energy_Price.amount	Bid price in €/MWh (currency_Unit per price_Measure_Unit) Must have a maximum of 2 decimal places Must be between -9 999 and 99 999 The decimal separator is the decimal point <i>e.g.: 15.25</i>	Mandatory (TOPNIVEAU check)

Figure 3: FAT representation in seconds and equivalence with ramp in MW/min.



Définition Rampe et FAT Full Activation Time

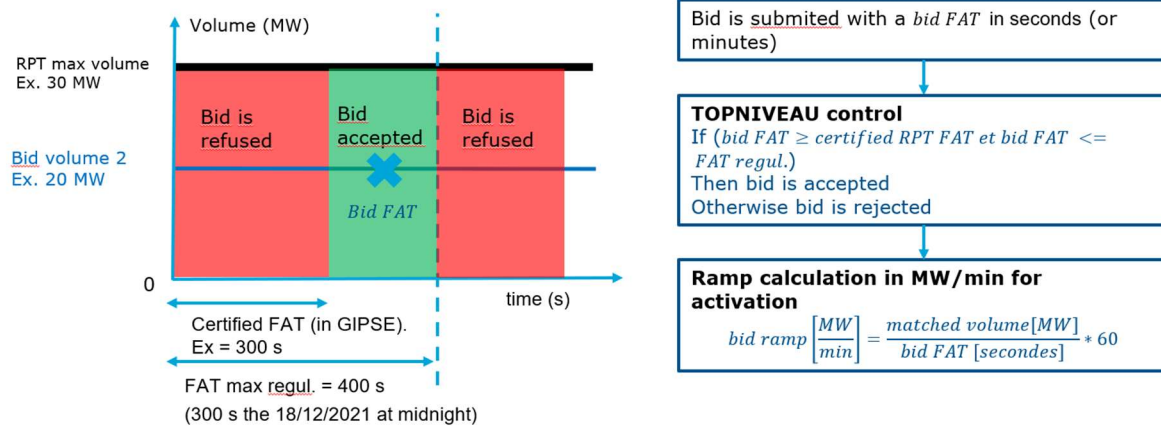


FAT is a duration expressed in seconds or minutes in the Reserve Bid Document

The max certified activation duration per RPG is in GIPSE application

Regulation introduce a maximal FAT of 400 seconds that will be modified to 300 s the 18/12/2024.

FAT = activation duration for a FRR from 0 % to +100 % (or -100 %) **of the bid volume**



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▪ Time change

Changing from winter to summer time (and vice versa) results in a time zone change when UTC is used. The time zone is not populated in the bid documents (neither in name nor in content): The time change is therefore transparent.

Examples of “timeInterval” for bids transmitted around the times of transition to summer and winter time are given below.

Example 1: Transition to summer time, for bids applying on the day of 25/03/2018:

UTC start time	UTC end time	Time Zone	Local start time France
T00:30Z	T00:45Z	UTC+1	01:30
T00:45Z	T01:00Z	UTC+1	01:45
T01:00Z	T01:15Z	UTC+2	03:00
T01:15Z	T01:30Z	UTC+2	03:15
T01:30Z	T01:45Z	UTC+2	03:30

Example 2: Transition to winter time, for bids applying on the day of 28/10/2018:

UTC start time	UTC end time	Time Zone	Local start time France
T00:30Z	T00:45Z	UTC+2	02:30
T00:45Z	T01:00Z	UTC+2	02:45
T01:00Z	T01:15Z	UTC+1	02:00
T01:15Z	T01:30Z	UTC+1	02:15
T01:30Z	T01:45Z	UTC+1	02:30

4.2.2 Bid document examples

An example of a valid bid file for a fictitious “SIRAP” market participant with a 4 RPG in its perimeter



SIRAP_2021_02_19_0900.xml

The ACK file returned by TOPNIVEAU:



SIRAP_2021_02_19_0900_ACK.xml

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4.2.3 Agreement for the constitution of document and bid IDs (mRID)

A bid document is identified by an ID, the mRID of document, which is a field of the XML document. Multiple versions of a document can have the same mRID (the version number must be incremented).

Each of the bids is also identified by a unique bid mRID.

The mRIDs of the document are limited to 35 characters maximum and must respect a precise format:

- **mRID of documents**

The document mRID must be established in the following way:

AFRR_<date_application>_<heure d'application début>_<heure d'application fin>_<ID acteur>

eg.: AFRR_20190809_1800_1815_RR

Where:

- AFRR_ prefix;
- Date of application in YYYYMMDD format;
- Start and end application time in hhmm_hhmm format. Must be UTC;
- Market Participant ID: name of the Market Participant (short name assigned by RTE) (less than 11 characters)

NB: the document mRID is a field of the XML document; it is not the document name. There is no set format regarding the document name as it is not operated by RTE. RTE operates only the XML content.

- **bid mRID**

The bid mRID must be established in the following way:

AFRR_<date_application>_<heure d'application début>_<code EDR>_<id offre>

e.g.: AFRR_20190809_1800_UNIT 1_10

With:

- AFRR_ prefix;
- Date of application in YYYYMMDD format;
- Application time (i.e.: **Start** of the validity period) in hhmm format (UTC time);
- RPG code (10¹ characters maximum), may contain spaces;
- Bid ID: Identifies bids, up to 5 numeric characters maximum. There cannot be two identical mRIDs in a bid document, but the bid IDs can be maintained between 2 versions of a document.

Compliance with this format will be subject to checks by TOPNIVEAU (see 4.2.4). Non-compliance with this format will lead to rejection of the bid.

¹ With the implementation of the new RPG names (suffix "F"), the decision was made to allow RPG names with up to 10 characters (limit was 8 characters for scheduling entities).

4.2.4 Overview of checks on the validity of the documents and bids

When a document is submitted by the market participant, the application performs checks:

- **Syntax:** verifies that the document format is readable and that the document contains the tags expected by the XSD;
- **Business:** to ensure the presence of the values required for TOPNIVEAU processing and the consistency of the data supplied with the reference data.

1. **Document format check (document must be XML)**

2. **XSD check** (see paragraph 4.2)

If the document does not respect the XSD, the document is rejected. ACKs are displayed on the HMI indicating the errors. The document is not added to the database. The information is displayed in the event log.

3. **Document header check**

If at least one check is in error, the ACK is fed with specific error codes, the bid database is not populated, the exchange is plotted in the event log, the document is identified as "Rejected".

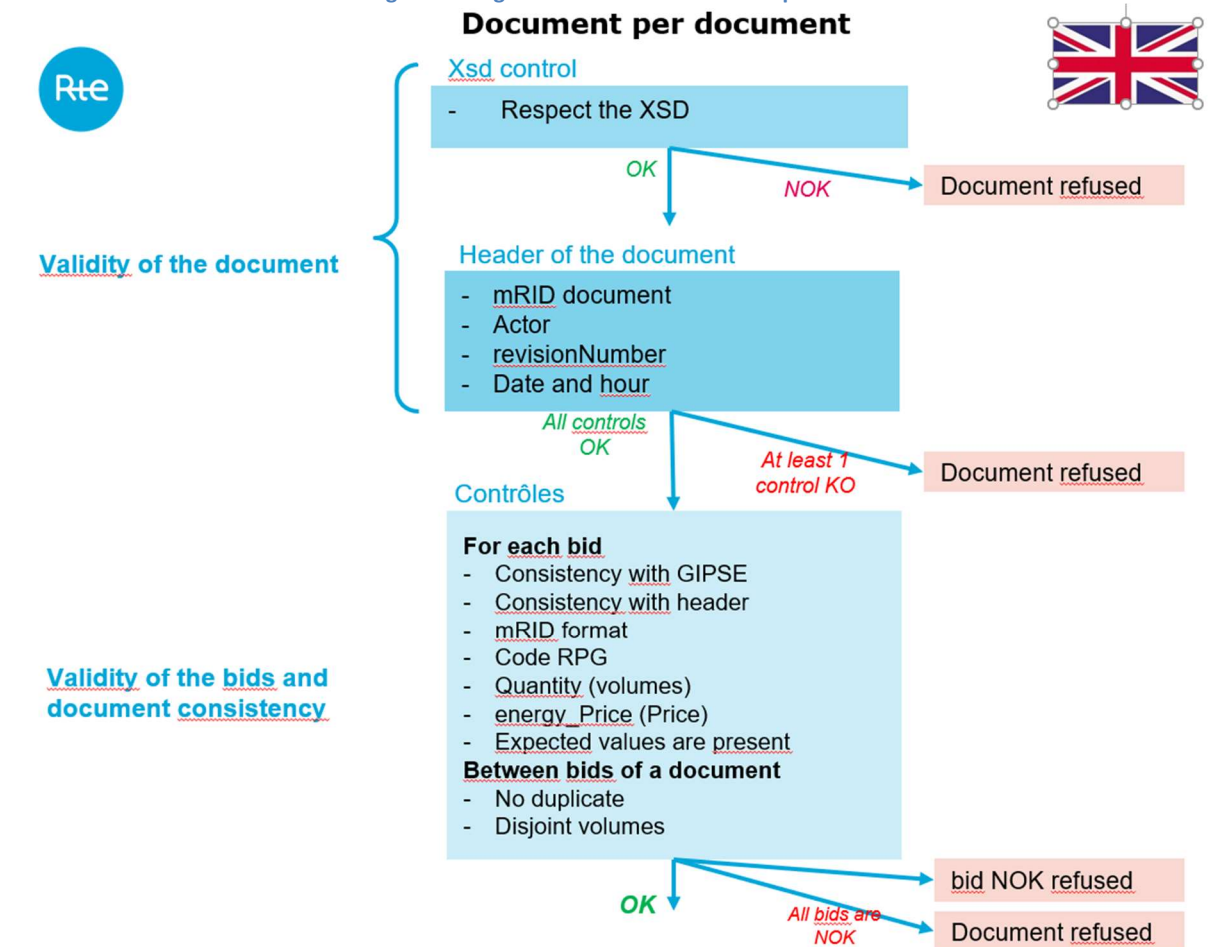
4. **Document content check (bids)**

See the expected fields in Table 1

For each bid, if a check is KO, the bid is rejected (it alone), the bid status is "Rejected", a specific ACK is generated.

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Figure 4: Diagram of bid document check process



Additional rules:

- If a document does not contain bids, the document is rejected (the bids in the last document are kept valid);
- If all bids in the document are rejected, the document is rejected;
- If several bids for a same RPG have volumes attached: both bids are rejected.
e.g.: RPG A upward bid 1 quantity = 25-50 MW
RPG A upward bid 2 quantity = 0-40 MW

4.2.5 Clarification on bid volumes with decimals

The volume of standard aFRR bids expected by PICASSO must be a whole number. According to this rule TOPNIVEAU rejects bids with volumes that are not an integer.

If the market participant submits an upward bid of 27.8 MW and the certified upward volume of this RPG is 27 MW then the bid is rejected. The error message returned in the ACK is « *Les volumes d'offres doivent être des entiers >=0* ». (Bid volumes must be integers >=0).

4.2.6 Timeline of transmission of bids

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▪ Submission of bids

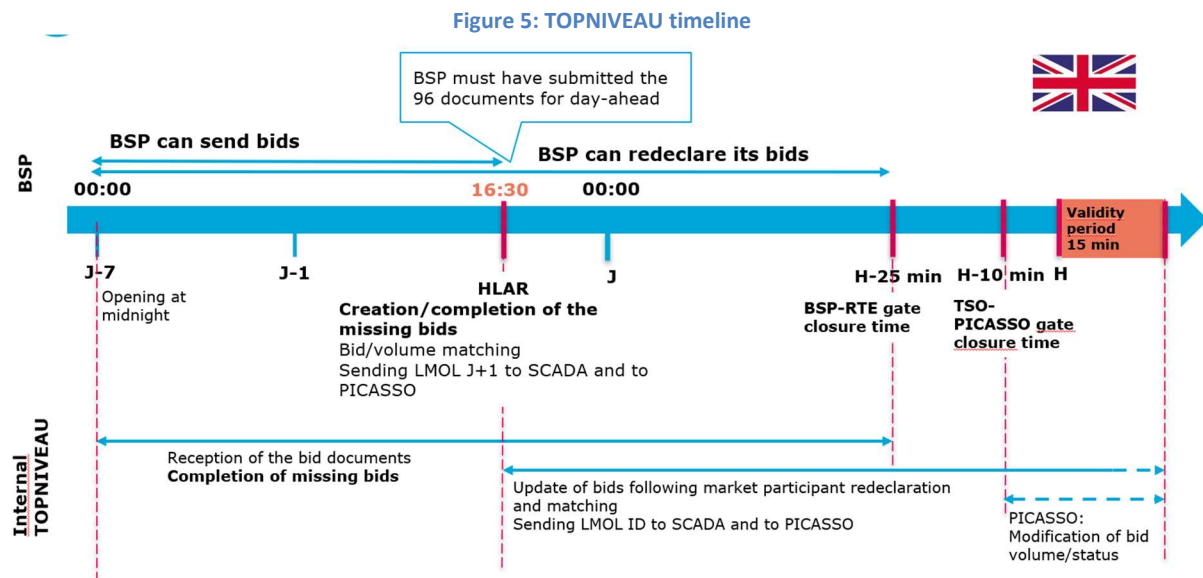
Submission of bids is **allowed from D-7 at midnight**. Bids can be submitted for all of the day in 7 days.

The bid documents are expected for the HLAR gate closure at 4:30 pm. It is still possible to submit a document once this gate closure has passed (next paragraph).

▪ Redeclaration of bids

The RP may update one or more bids already submitted by sending one or more documents. Each newly received document for a given validity period replaces the document previously received for this same validity period. Updates are handled according to a **cancel and replace document system**. If a document is cancelled, then all the bids of the last document are changed to obsolete. A bid which is not present in a document version leads to its cancellation in the database.

A document can be sent no later than 25 minutes before the start of the validity period.



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▪ Creation of bids by RTE

Once the system access deadline has passed, if there are no bids for a RPG or if a bid is rejected by the checks, RTE creates the bids (upward and downward as required) according to the following rules:

	Upward	Downward
Minimum volume	0	0
Maximum volume	Certified upward volume	Certified downward volume
Price	Upward bid price of the RPG for the validity period 23:45-midnight of the D-1 day in relation to the date the document was submitted	Downward bid price of the RPG for the validity period 23:45-midnight of the D-1 day in relation to the date the document was submitted
FAT	Certified FAT of the RPG	Certified FAT of the RPG

▪ Completion of bids by RTE

If some bids do not exist in the submitted document or if the checks lead to rejected bids (in practice if the volume ranges are not continuous), then RTE completes the missing ranges according to the following rules:

	Upward	Downward
Minimum volume	Max(0, previous volume + 1 MW)	Max(0, previous volume + 1 MW)
Maximum volume	Min(certified Volume, next Volume-1 MW)	Min(certified Volume, next Volume-1 MW)
Price	Max price of all valid upward bids for the RPG for the validity period	Min price of all valid downward bids for the RPG for the validity period
FAT	Max FAT of all valid upward bids within the limit of the certified FAT	Max FAT of all valid downward bids within the limit of the certified FAT

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4.2.7 ACK acknowledgment and error code

TOPNIVEAU generates ACKs after receipt and checks of the bid documents. These ACKs are XML documents, which can be viewed by HMI and API, that indicate whether a bid document or a bid is valid or not. An ACK contains a "Reason Code" (for example A02, B01, 999) giving the classification of the message and a "Reason Text" stating the reason for the error.

ACKs respect the following ENTSO-E format (reference [6]):

Acknowledgement document	iec62325-451-1-acknowledgement_v8_0.xsd
---------------------------------	--

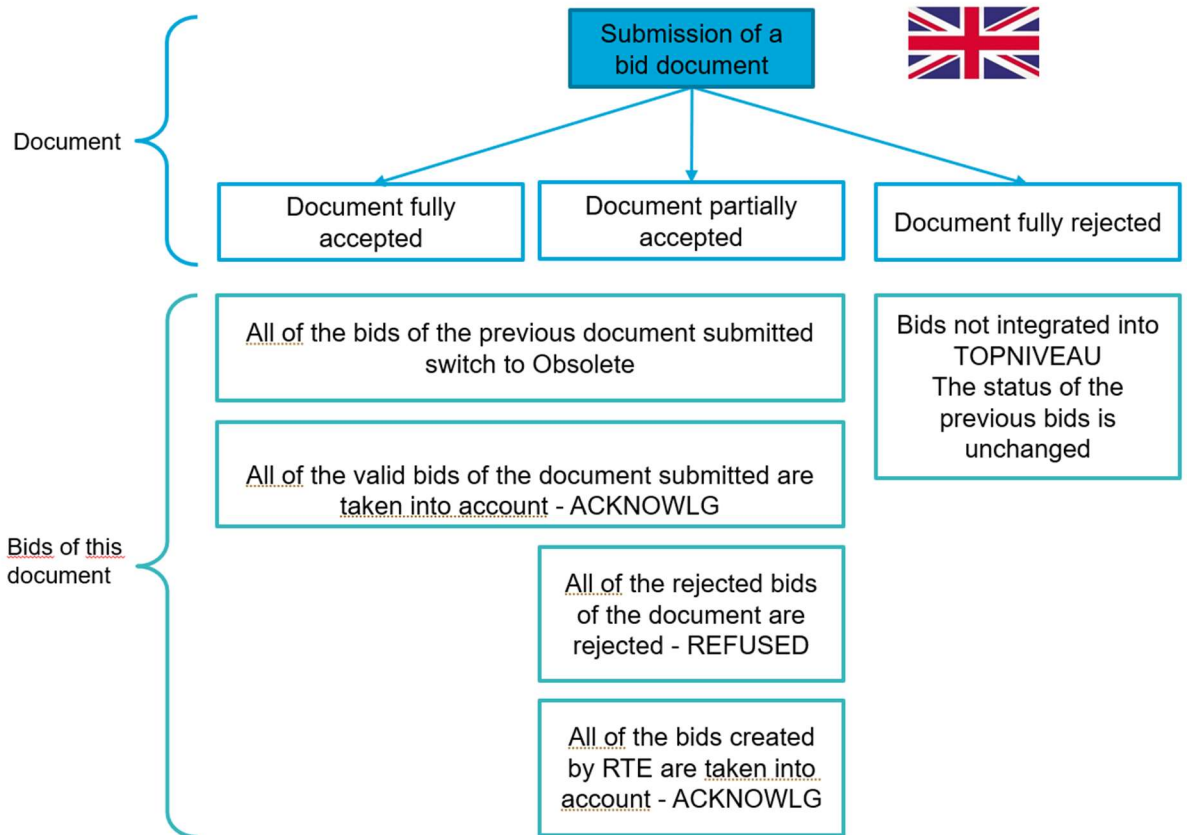
In this ACK, the RP will find the details of the errors encountered, coded according to the ENTSO-E code list or the local code list and accompanied by a text explaining the error encountered:

- If one (or several) document checks described in paragraph 4.2.4 does not pass, the ACK will inform the RP of the document related issues using a dedicated error code.
- If the checks at document level passed but one or more of the bids in the document (or all) did not pass the functional checks, the ACK will inform the RP of the errors encountered.

All error codes are listed in Table 2.

See examples in § 4.2.2.

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4.2.8 Life cycle

4.2.9

Bid API Status label	Bid log HMI label	Description
ACKNOWLEDG	Accepted	The bid is valid and is transmitted to SCADA for activation and to PICASSO
OBSOLETE	Obsolete	A bid taken into account switches to obsolete status if a new version of the bid is received and valid. If the bids in version 2 of the document are valid, then the bids taken into account in version 1 of the document are set to "obsolete" status
REFUSED	Rejected	Bid is rejected (failed checks)

4.2.10 Downgraded mode for submission of bids

If an external market participant is unable to submit the bid documents on the application (problem on the market participant's network or issue of availability or access to the RTE Front Office), a CNES operator may submit the bids for the next day on behalf of a market participant.

The characteristics of this submission are as follows:

- The document must be a zip document containing the 96 XML bid documents;
- The submission cannot be made on D-1 for day D between 16:30 (system access deadline) and 18:00 as the bridge is to be closed to allow this downgraded mode of operation and moreover the document must be received before the start of the intra-day;
- The rules for checking the validity of the document and of the bids are applied. The creations/completion of the bids are also carried out;
- The origin of the addition is plotted in the event log.

4.2.11 Operation of the generalised pro rata by TOPNIVEAU

Under conditions where the schedules received by TOPNIVEAU are on the whole incorrect or unavailable, the RTE operator can activate the generalised pro rata mode in TOPNIVEAU over a selected period of time.

The TOPNIVEAU pro rata status is viewable in the bid API at 5-minutes intervals (see § 4.4.6).

For information, during pro rata periods, the bids submitted by the market participants remain in the database and are available in the bid API. However, they are not transmitted to the SCADA StanWay for activation.

4.2.12 Closing/reopening of the bid submission gates

If bids cannot be sent to SCADA StanWay (for example on maintenance of TOPNIVEAU or certain infrastructures), the RTE operator can block the submission of bid files in TOPNIVEAU. The operator selects the time from which it is no longer possible to submit bids (irrespective of the date of application of these bids).

Market participants can view this information by HMI and by API:

- Via the bid submission HMI:
At 11:55, the closing time of the gates is indicated.

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At 12:00, the gates are viewed as closed



- Following an API bid submission (§ 4.4.3) via the ACK recovery API (§ 4.4.5).
The file is completely rejected and the Z54 code with the text “*Guichets fermés, les dépôts d'offres sont bloqués*” (gates closed, bid submissions are blocked) is returned.

Example of the ACK file following the submission of a document at 12:13:49 considering that the gates have been closed since 12:00

```
<Acknowledgement_MarketDocument xmlns="urn:iec62325.351:tc57wg16:451-1:acknowledgementdocument:8:0">
  [...]
  <received_MarketDocument.revisionNumber>1</received_MarketDocument.revisionNumber>
  <received_MarketDocument.createdDateTime>2021-08-06T10:13:49Z</received_MarketDocument.createdDateTime>
  <Reason>
    <code>A02</code>
    <text>Document complètement rejeté</text>
  </Reason>
  <Reason>
    <code>Z54</code>
    <text>Guichets fermés, les dépôts d'offres sont bloqués</text>
  </Reason>
</Acknowledgement_MarketDocument>
```

The reopening of the gates by the RTE operator is communicated to the market participants through the hotline.

4.3 HMI

The different HMIs of the TOPNIVEAU application for the market participants are listed below.

4.3.1 Bid submission

The bid submission HMI allows the market participant to:

- Submit one or more bid documents by drag and drop;
- Access a browser window to choose one or more bid documents;
- List the documents that have been selected and their status.

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4.3.2 Event log

The event log allows market participants to visualise the different types of events which concern them:

- Events relating to submission of bids;
- Events relating to the creation of a bid;
- ...

Each line represents an event (and therefore one document per line). The available information is:

- The date and time of the event;
- The type of event;
- The status (File Accepted/Rejected, Partially Accepted; Completed depending on the event)
- The issuer (short code of the Reserve Provider);
- EIC code of the issuer;
- The name of the document;
- Timestamp of the start of the validity period;
- Timestamp of the end of the validity period;
- The document mRID;
- The recipient, for example TOPNIVEAU for the submission of bids
- The version of the document;
- A column allows
 - o The download of the document that was submitted (for verification);
 - o The download of the ACK document associated with the event.

Sorting and filtering functions are possible.

4.3.3 Bid log

The bid log allows market participants to visualise the different types of bids which concern them:

Each line represents a bid. The available information is:

- Market participant (short code of RP);
- EIC code of the market participant;
- RPG;
- Whether or not the bid has been created by RTE;
- mRID;
- Direction (upward or downward),
- Timestamp of the start of the validity period;

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- Timestamp of the end of the validity period;
- Minimum volume;
- Maximum volume;
- FAT in seconds;
- Price;
- Version of the document the bids are from.
- Status (see paragraph 4.2.8).

Sorting and filtering functions are available.

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4.4 Machine to Machine Interface (API)

4.4.1 URL of TOPNIVEAU API

Environments	URL
PFRFI2 test environment	https://secure-apps-metier.iservices.rte-france.com/topniveau-pfrfi2-api/...
Production environment	https://secure-apps.iservices.rte-france.com/topniveau-api/...

Bid submission:

<https://.../file/external/v1/offers/documents/multipart>

View status of ticket:

<https://.../file/external/v1/offers/documents/{ticketNumber }/status>

View ACK:

<https://.../file/external/v1/offers/documents/{ticketNumber }/ack>

Consultation of bids:

<https://.../offer/external/v1/offers>

4.4.2 General responses

Requesting the TOPNIVEAU APIs returns at a minimum the following HTTP codes:

HTTP CODES:	Case
200	OK
201	Created
400	Bad Request
401	Unauthorized
403	Forbidden
404	Not Found
500	<Erreur spécifique au front RTE ou à l'application TOPNIVEAU>

In case of a 200 response, the specific responses are given in the body.

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4.4.3 Submitting a bid document

▪ Resources

Name	Method	URI
Submitting a ReserveBidDocument by API	POST	http://../file/external/v1/offers/documents/multipart

This API allows you to submit an XML bid document "ReserveBidDocument" in the TOPNIVEAU application.

▪ Headers

Parameters NAME	CARD.	DESCRIPTION	TYPE
file (multipart/form-data)	1	Type of document requested	XML

Content-Type: multipart/form-data

▪ Body

A multipart containing a ReserveBidDocument type XML document respecting the format defined in § 4.2.

▪ Response

In the case of a 200 response, the body contains a JSON indicating:

- The name of the document submitted;
- A message;
- The date of generation of the response;
- The ticket number in order to view the status of the document's processing (§ 4.4.4)

In the other cases: the body contains a JSON detailing the issue encountered.

Example:

```
{
  "fileName": "NomDocument.xml",
  "message": "Le document a été enregistré",
  "creationDate": "2020-01-27T13:39:42Z",
  "ticketNumber": "9D203D5911F335DEE053B210840AFA07"
}
```

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4.4.4 Viewing the status of implementation of the checks carried out on the document

▪ Resources

Name	Method	URI
Returns the status of a document submitted by API	GET	http://../file/external/v1/offers/documents/{ticketNumber}/status

This service allows you to consult the status of a bid document submitted on the TOPNIVEAU application.

▪ Parameters

Parameters NAME	CARD.	DESCRIPTION	TYPE
Ticket number	1	The ID of the document submitted, for which the user requests the status	string

▪ Response

In the case of a 200 response, the body contains a JSON indicating

- The name of the document;
- The processing status of the document submitted:
 - PENDING: the processing of the file is pending
 - DONE: the document processing is finalised and the result of the checks can be retrieved
 - ERROR: error found
- Document receipt date;
- Ticket number

In the other cases: the body contains a JSON detailing the issue encountered

Example:

```
{
  "fileName": "Offre_valide.xml",
  "status": "DONE",
  "creationDate": "2020-01-27T13:39:42Z",
  "ticketNumber": "9D203D5911F335DEE053B210840AFA07"
}
```

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4.4.5 Viewing the outcome of the checks carried out on the document (ACK)

- **Resources**

Name	Method	URI
View the result of the checks on a document by API	GET	http://.../file/external/v1/offers/documents/{ticketNumber}/ack

This service allows you to view the results of checks carried out by RTE IS following a bid submission. The response is an "Acknowledgement" type XML document.

- **Parameters**

Parameters NAME	CARD.	DESCRIPTION	TYPE
Ticket number	1	The ID of the document submitted, for which the user requests the status	string

- **Response**

In the case of a 200 response, the body contains an acknowledgement type XML (§ 4.2.7).

The acknowledgement informs the user of the result of the checks carried out by the TOPNIVEAU application following submission of a bid document. The ACK indicates any errors detected in the document or bids (see Table 2 for the content details of the ACK and error codes)

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4.4.6 View the bid list

The final dispatch schedule (**programQuantity**) provided in this API corresponds to the final dispatch schedule at 5-min intervals, on the scale of the RPG. Only the upward and downward aFRR values required for TOPNIVEAU are available. These are the final dispatch schedule values obtained as a result of balancing operations or unexpected events and therefore the volume of bid sent to StanWay and PICASSO.

- **Resources**

Name	Method	URI
Returns bids for a given validity period	POST	http://../offer/external/v1/offers

This service allows the user to view the bids attached to a delivery period and a version of a document. It also shows bids that have been matched.

- **Parameters**

None

- **Body**

ATTRIBUTE	MANADATORY	DESCRIPTION	TYPE
periodStart	Yes	Start date of the period concerned. Format: "2020-07-01T18:00:00.000Z"	string
revisionNumber	Yes	Version of document. Format: an integer or "last" number to have the latest version	string
isCreatedByRte	No	Screening of bids created by RTE.	boolean
status	No	Filter on the status of bids. Possible values: ACKNOWLG, OBSOLETE and REFUSED	string
onlyMatchedOffers	No	Filter for matched bids	boolean
registeredResources	No	Filter on RPGs Format: list of RPG codes	[string]

Request example 1 (mandatory attribute only):

```
{
  "periodStart": "2020-07-01T18:00:00.000Z",
  "revisionNumber": "last"
}
```

Request example 2:

```
{
  "periodStart": "2020-07-01T18:00:00.000Z",
  "revisionNumber": "last",
  "isCreatedByRte": false,
  "status": "ACKNOWLG",
}
```

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```

"onlyMatchedOffers": true,
"registeredResources": ["EDR1", "EDR2"]
}

```

Bid status

API label	HMI label	Description
ACKNOWLG	Accepted	The bid is valid and is transmitted to SCADA for activation and to PICASSO
OBSOLETE	Obsolete	A bid switches to obsolete status if a new version of the bid is received and valid. If the bids in document version 2 are valid, then the bids in document v1 are set to "obsolete" status
REFUSED	Rejected	Bid is rejected (failed checks)

▪ Response

In the case of a 200 response, the body contains a list of bids with the following information for each bid:

ATTRIBUTE	DESCRIPTION	TYPE
eic	The RPG's EIC code	string
isCreatedByRte	true if the bid is created by RTE, false otherwise	boolean
direction	upward or downward direction	string
price	The bid price (€/MWh)	double
status	Bid status	string
isMatch5min	true if the bid is matched on the 1st 5' interval, false otherwise	boolean
isMatch10min	true if the bid is matched on the 2nd 5' interval, false otherwise	boolean
isMatch15min	true if the bid is matched on the 3rd 5' interval, false otherwise	boolean
isProrata5min	true if TOPNIVEAU is pro rata on the 1st 5' interval, false otherwise	boolean
isProrata10min	true if TOPNIVEAU is pro rata on the 2nd 5' interval, false otherwise	boolean
isProrata15min	true if TOPNIVEAU is pro rata on the 3rd 5' interval, false otherwise	boolean
bidTimeSeriesMrid	The document mRID	string
revisionNumber	The version number of the document	long
periodStart	Bid period start date.	string
periodEnd	Bid period end date.	string
registeredResource	The name of the RPG code	string
activationConstraintDuration	The activation time or "FAT" (seconds)	long
maximumQuantity	Maximum volume (MW)	long
minimumQuantity	Minimum volume (MW)	long
programQuantity5min	The schedule volume on the 1st 5' interval	double
programQuantity10min	The schedule volume on the 2nd 5' interval	double

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programQuantity15min	The schedule volume on the 3rd 5' interval	double
----------------------	--	--------

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Example:

```
{
  "matchedOffers": [
    [
      {
        "eic": "17X100A100R0775D",
        "isCreatedByRte": false,
        "direction": "Hausse",
        "price": 10.2,
        "status": "ACKNOWLG",
        "isMatch5min": false,
        "isMatch10min": false,
        "isMatch15min": false,
        "isProrata5min": false,
        "isProrata10min": false,
        "isProrata15min": false,
        "bidTimeSeriesMrid": "AFRR_20200715_1530_SURESNEF_1",
        "revisionNumber": 1,
        "periodStart": "2020-07-15T15:30:00Z",
        "periodEnd": "2020-07-15T15:45:00Z",
        "registeredResource": "SURESNEF",
        "activationConstraintDuration": 300,
        "maximumQuantity": 0,
        "minimumQuantity": 25,
        "programQuantity5min": null,
        "programQuantity10min": null,
        "programQuantity15min": null
      },
      {
        "eic": "17X100A100R0775D ",
        "isCreatedByRte": false,
        "direction": "Hausse",
        "price": 11.5,
        "status": "ACKNOWLG",
        "isMatch5min": true,
        "isMatch10min": true,
        "isMatch15min": true,
        "isProrata5min": false,
        "isProrata10min": false,
        "isProrata15min": false,
        "bidTimeSeriesMrid": "AFRR_20200715_1530_SURESNEF_2",
        "revisionNumber": 1,
        "periodStart": "2020-07-15T15:30:00Z",
        "periodEnd": "2020-07-15T15:45:00Z",
        "registeredResource": "SURESNEF",
        "activationConstraintDuration": 300,
        "maximumQuantity": 26,
        "minimumQuantity": 45,
        "programQuantity5min": 94,
```

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```
"programQuantity10min": 94,
"programQuantity15min": 94
},
{
  "eic": "17X100A100R0775D ",
  "isCreatedByRte": false,
  "direction": "Baisse",
  "price": 5,
  "status": "ACKNOWLG",
  "isMatch5min": true,
  "isMatch10min": true,
  "isMatch15min": true,
  "isProrata5min": false,
  "isProrata10min": false,
  "isProrata15min": false,
  "bidTimeSeriesMrid": "AFRR_20200715_1530_SURESNEF_3",
  "revisionNumber": 1,
  "periodStart": "2020-07-15T15:30:00Z",
  "periodEnd": "2020-07-15T15:45:00Z",
  "registeredResource": "SURESNEF",
  "activationConstraintDuration": 300,
  "maximumQuantity": 0,
  "minimumQuantity": 55,
  "programQuantity5min": 45,
  "programQuantity10min": 45,
  "programQuantity15min": 45
}
],
"error": null
}
```

In the other cases: the body contains a JSON detailing the issue encountered.

5 Back-office data review: BOSS application

5.1 Set of rules for requests

The API is exposed as follows:

Exposure	REST / JSON
Method	POST
Resource URL	<i>/external/afrr/edr/period/search/v1</i>

5.2 Inputs

The calculation results are retrieved via the BOSS API via a unit request (POST method).

The method must be requested with the following parameters:

NAME	DESCRIPTION	DATA TYPE	VALUES / FORMAT	MANADATOR Y
start_date	Search start date	date	YYYY-MM-DDTHH:mm:ssZ in UTC time	YES
end_date	Search end date	date	YYYY-MM-DDTHH:mm:ssZ in UTC time	YES
date_type	Query the resource by application date or update date	String	Possible values: UPDATED = date of update APPLICATIVE = application date	YES
edr_codes	List of RPGs	List<String>	e.g.: EDRCODE1	NO
page	Service pagination	Digital		NO

Operating principle:

- Using the UPDATED parameter, the API will respond with the values that have been changed between the start date and the end date given as input. (see example in paragraph 5.3)
- Using the APPLICATIVE parameter, the API will respond with the values with an application interval between the start date and the end date given as input. (see example in paragraph 5.3)

5.3 Response (output)

Depending on the parameters sent in the request, the BOSS API returns a 5-minute interval or a 5-minute interval list per RPG.

During its nominal operation, BOSS will provide the data at the latest at H+15 min after each 5-min interval.

Table of the response structure

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Field		Type		Description	
start_date	Date			Search start date Format: UTC YYYY-MM-DDTHH:mm:ssZ	
end_date	Date			Search end date Format: UTC YYYY-MM-DDTHH:mm:ssZ	
eic_code	String			EIC code of the Reserve Provider	
total_page	Digital			Total number of pages available	
resolution	String			Default value "PT5M"	
periods	Field	Type		List of calculated values per day	
	period_day	Date		Day of application of the 5-minute interval Format: UTC YYYY-MM-DDTHH:mm:ssZ	
	edrs	Field	Type	List of calculated values per RPG	
		edr_code	String		RPG code
		calculs_afrr	Field	Type	List of values per 5-minute interval
			position	Digital	Position of the 5-minute interval in the day of application
			energy_up	Decimal	Upward energy calculated in Wh
			energy_down	Decimal	Downward energy in Wh
			price_up	Decimal	Upward volume weighted average settlement price in €/MWh
			price_down	Decimal	Downward volume weighted average settlement price in €/MWh
			remuneration_price_up	Decimal	Upward remuneration price in €
			remuneration_price_down	Decimal	Downward remuneration price in €
			update_date	Date	Date of last update the data Format: UTC YYYY-MM-DDTHH:mm:ssZ

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			revision_number	Digital	Version number of the calculation, incremented each time it is updated
date_type	String				UPDATED: the data are queried according to the calculation update date APPLICATIVE: the data are queried according to the date of application of the calculation

Example of API response in APPLICATIVE mode (one RPG, between 10AM and 10:15AM UTC time for 3 intervals of 5 minutes):

```
{
  "start_date": "2021-03-10T10:00:00Z",
  "end_date": "2021-03-10T10:14:59Z",
  "eic_code": "EICCODE1",
  "total_page": 1,
  "resolution": "PT5M"
  "periods": [
    {
      "period_day": "2021-03-09T23:00:00Z",
      "edrs": [
        {
          "edr_code": "EDRCODE1",
          "calculs_afrr": [
            {
              "position": 133,
              "energy_up": 12345,
              "energy_down": 56789,
              "price_up": 12.345,
              "price_down": 56.789,
              "remuneration_price_up": 0.152,
              "remuneration_price_down": 3.225,
              "update_date": "2021-03-10T10:05:26Z",
              "revision_number": 1
            },
            {
              "position": 134,
              "energy_up": 12345,
              "energy_down": 56789,
              "price_up": 12.345,
              "price_down": 56.789,
              "remuneration_price_up": 0.152,
              "remuneration_price_down": 3.225,
              "update_date": "2021-03-10T10:10:26Z",
              "revision_number": 1
            },
            {
              "position": 135,
              "energy_up": 12345,
              "energy_down": 56789,
              "price_up": 12.345,
              "price_down": 56.789,
```

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```

    "remuneration_price_up": 0.152,
    "remuneration_price_up": 3.225,
    "update_date": "2021-03-10T10:15:21Z",
    "revision_number": 1
  }
]
}
]
"date_type": "APPLICATIVE"
}

```

Example of API response in UPDATED mode (one RPG, between 10:05 and 10:10 UTC time with one updated interval during this period):

```

{
  "start_date": "2021-03-10T10:05:00Z",
  "end_date": "2021-03-10T10:10:00Z",
  "eic_code": "EICCODE1",
  "total_page": 1,
  "resolution": "PT5M"
  "periods": [
    {
      "period_day": "2021-03-09T23:00:00Z",
      "edrs": [
        {
          "edr_code": "EDRCODE1",
          "calculs_afrr": [
            {
              "position": 133,
              "energy_up": 12345,
              "energy_down": 56789,
              "price_up": 12.345,
              "price_down": 56.789,
              "remuneration_price_up": 0.152,
              "remuneration_price_up": 3.225,
              "update_date": "2021-03-10T10:05:26Z",
              "revision_number": 1
            }
          ]
        }
      ]
    },
    {
      "period_day": "2021-02-09T23:00:00Z",
      "edrs": [
        {
          "edr_code": "EDRCODE1",
          "calculs_afrr": [
            {
              "position": 94,
              "energy_up": 54321,
              "energy_down": 9876,
              "price_up": 54.321,
              "price_down": 98.76
            }
          ]
        }
      ]
    }
  ]
}

```

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```
{
  "date_type": "UPDATED"
}
```

5.4 Processing rules

When the data are paginated, the *total_page* variable is greater than 1. To obtain all the data for each page, the API must be requested on each page by editing the *page* at the input field.

5.4.1 *Rules for processing input parameters*

Input parameters affected by the processing rule	Description	Number
start_date end_date date_type	Required parameters	RG_E_02
start_date end_date	The date must be in UTC format: YYYY-MM-DDTHH:mm:ssZ	RG_E_03
start_date end_date	The start_date parameter must be less than end_date	RG_E_04
start_date end_date	The start_date and end_date parameters must correspond to the same day at French time.	RG_E_05
edr_codes	If the edr_codes parameter is not entered, the API returns all of the results for each RPG of the market participant over the period.	RG_E_06
start_date end_date page	For pagination, all date parameters must be the same between requests	RG_E_07

5.4.2 Processing rules applied at output

Description	Number
The calculation intervals are 5 minutes.	RG_S_01
Dates are in UTC format	RG_S_02
For time series, the position field is the position number of the 5-minute interval in the day.	RG_S_03
All calculated energies are expressed in Wh.	RG_S_04
All volume weighted settlement prices are expressed in €/MWh. The precision of the values can be up to 3 digits after the decimal point.	RG_S_05
If the volume of response data is too large, these will be paginated, per day of application. The data is paginated at the "edrs" block.	RG_S_06

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The total number of pages is specified in the response.	RG_S_07
The maximum number of items (5-minute intervals per RPG) will be 3600 per page (12 RPGs per full day).	RG_S_08
Remuneration prices are expressed in €. The precision of the values can be up to 3 digits after the decimal point.	RG_S_09

5.5 Errors

5.5.1 Functional errors

In the event of a functional error, the API returns an HTTP 400 (Bad Request) error.

BOSS_ERROR_F01 (HTTP code 400)	
Description	If the EIC code is unknown or invalid, the Service generates an error.
Name	FR: Unknown or invalid EIC code EN: Unknown or invalid EIC code
Request example	<pre>{ "start_date": "2020-12-14T10:00:00Z", "end_date": "2020-12-14T10:10:04Z", "date_type": "APPLICATIVE" }</pre>
BOSS_ERROR_F02 (code http 400)	
Description	The time period between start_date and end_date for a query must not be longer than one 24-hour day
Name	FR: La période demandée ne doit pas être supérieure à une journée de 24h EN: The requested period must not exceed 24 hours
Request example 1	<pre>{ "start_date": "2021-05-09T22:00:00Z", "end_date": "2021-05-10T23:00:00Z", "date_type": "APPLICATIVE" }</pre>
Request example 2	<pre>{ "start_date": "2021-05-09T14:00:00Z", "end_date": "2021-05-10T14:00:00Z", "date_type": "APPLICATIVE" }</pre>
BOSS_ERROR_F03 (code http 400)	
Description	If any of the required parameters are missing, the Service generates an error.
Name	FR: Paramètre obligatoire absent EN: Missing mandatory input
Request example	<pre>{ "end_date": "2020-12-14T10:10:04Z", "eic_code": "EICCODE1", "date_type": "APPLICATIVE" }</pre>
BOSS_ERROR_F04 (code http 400)	
Description	If the parameters are entered, the start_date parameter is after end_date
Name	FR: Date de début supérieure à date de fin EN: Start date after end date
Request example	<pre>{ "start_date": "2020-12-14T11:00:00Z", "end_date": "2020-12-14T10:00:00Z", "date_type": "APPLICATIVE" }</pre>
BOSS_ERROR_F05 (code http 400)	
Description	If the start_date and/or end_date format is not UTC, the Service generates an error.

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Name	FR: Format des dates incorrect EN: Invalid date format
Request example	<pre>{ "start_date": "2020/12/14T10:00", "start_date": "2020/12/14T10:10", "date_type": "APPLICATIVE" }</pre>
BOSS_ERROR_F06 (code http 400)	
Description	The page parameter is invalid (if the requested page number is higher than the available page number)
Name	FR: Le numéro de page demandé est invalide EN: Invalid page number
Request example	<i>If the total_page response was 5:</i> <pre>{ "start_date": "2020-12-14T11:00:00Z", "end_date": "2020-12-14T10:00:00Z", "date_type": "APPLICATIVE", "page": 6 }</pre>

5.5.2 Technical errors

401	
HTTP status code	401
Message	Unauthorized
Description	Authentication error
403	
HTTP status code	403
Message	Forbidden
Description	Error generated if the requester does not have permission to request the API
404	
HTTP status code	404
Message	Not found
Description	Invalid URL
500	
HTTP status code	500
Message	Internal Server Error
Description	Any other technical error
503	
HTTP status code	503
Message	Service Unavailable
Description	Error generated on maintenance

6 Definitions and Glossary of Abbreviations

Fr	En	Meaning
SE		Scheduling Entity
RPG		Reserve Providing Group
-	CMOL	Common Merit Order List = EU list of balancing energy bids sorted in order of bid price
HLAR		System Access Deadline
HTTPS		HyperText Transfer Protocol Secure
HMI		Human-Machine interface
-	LMOL	Local Merit Order List
MARS		<i>Marché d'Activation de la Réserve Secondaire</i> (automatic Frequency Restoration Reserve activation market)
-	M2M	Communication between machines (Machine to Machine)
PKI (Certificate)		Name of the infrastructure to authenticate a user (Public Key Infrastructure)
PA		Forecast Dispatch Schedule
PM		Final Dispatch Schedule
RR	BSP	Balancing Service Provider
RS	aFRR	automatic Frequency Restoration Reserve (<i>réserve secondaire</i>)
	SCADA	Supervisory Control And Data Acquisition
IS		Information System
SSY		Frequency Ancillary services
	URL	Web address (Uniform Resource Locator)
	XSD	XML Diagram Definition
	XML	eXtensible Markup Language is a markup language for encoding documents

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Table 2: List of errors on a document and associated ACK

Scope of control (Document or Bid)	Error detected	Reason Code ENTSOE + description ENTSOE	Reason text TOPNIVEAU
D	No document errors and no errors in the bids contained in this document	A01 (Message fully accepted)	Document complètement accepté
D	No bid in document (after check)	A02 (Message fully rejected)	Document complètement rejeté
D	No document error but at least one of the bids contained in this document has an error at bid level (but not all)	A03 (Message contains errors at the time series level)	Document partiellement accepté
D	The participant does not have a valid participation agreement	A05 (Sender without valid contract)	L'acteur (eic : "sender_MarketParticipant.mRID") n'a pas d'accord de participation en vigueur
D	Prefix absent or not equal to "AFRR" application date not in YYYYMMDD format application date not consistent with the application date of the bid document application time start not in hhmm format application time start not consistent with application time start of document application time end not in hhmm format application time end not consistent with application time end of document	A51 (Message identification or version conflict)	Le mRID est non conforme
D	The BSP name at the end of the mRID document does not match the document EIC	A51 (Message identification or version conflict)	Le nom du BSP en fin de mRID du document ("mRID") ne correspond pas à l'eic ("sender_MarketParticipant.mRID")
D	If the revision number of the document received is equal to the last revision number in the database	A51 (Message identification or version conflict)	Le numéro de version de ce document existe déjà en base
D	If the revision number of the document received is less than the last revision number in the database	A51 (Message identification or version conflict)	Un numéro de version supérieur de ce document existe déjà en base
D	receiver_MarketParticipant.marketRole.type not equal to 'A04'	A53 (Receiving party incorrect)	Le champ "receiver_MarketParticipant.marketRole.type" doit être égal à "A04"
D	The 'receiver_MarketParticipant.mRID' field is not equal to '10XFR-RTE-----Q'	A53 (Receiving party incorrect)	Le champ "receiver_MarketParticipant.mRID" doit être égal à "10XFR-RTE-----Q"
D	type is not equal to A37	A62 (Invalid business type)	Le champ "type" doit être égal à "A37"
D	Sender indicated in file not consistent with connected user	A78 (Sender identification and / or role invalid)	Incohérence entre l'acteur connecté et l'acteur du document
D	The 'subject_MarketParticipant.mRID' field is different from the EIC code of the market participant contained in "sender_MarketParticipant.mRID"	A78 (Sender identification and / or role invalid)	Le champ "subject_MarketParticipant.mRID" doit être égal au code EIC de l'acteur

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Scope of control (Document or Bid)	Error detected	Reason Code ENTSOE + description ENTSOE	Reason text TOPNIVEAU
D	The "sender_MarketParticipant.mRID" field is empty	A78 (Sender identification and/or role invalid)	Le champ "subject_MarketParticipant.mRID" doit être égal au code EIC de l'acteur
D	sender_MarketParticipant.marketRole.type not equal to A46	A78 (Sender identification and/or role invalid)	Le champ "sender_MarketParticipant.mRID" doit contenir l'eic de l'acteur
D	subject_MarketParticipant.marketRole.type not equal to A46	A78 (Sender identification and/or role invalid)	Le champ "sender_MarketParticipant.marketRole.type" doit être égal à "A46"
D	Process.processType not equal to A51	A79 (Process type invalid)	Le champ "processType" doit être égal à "A51"
D	Other technical problem	A94 (document cannot be processed by the system)	Problème technique
D	Storage problem	A94 (document cannot be processed by the system)	Problème technique au niveau du stockage des données
D	Non XML document	B01 (incomplete document)	Document inapproprié
D	Technical problem reading document in Java	B01 (incomplete document)	Erreur lors de la validation du document
D	Document format issue (respect XSD)	B01 (incomplete document)	Erreur XSD : ligne : <XX> - message : <YY>
D	Empty file	B01 (incomplete document)	Fichier vide
D	Technical problem reading timeInterval in Java	B01 (incomplete document)	Le champ "timeInterval" n'est pas valide
D	Technical problem reading revisionNumber in Java	B01 (incomplete document)	Le champ revisionNumber n'est pas valide
D	The document does not have a bid	B01 (incomplete document)	Le document d'offre doit comporter au moins une offre
D O	reserveBid_Period.timeInterval must be between D and D+7 where D is the current date (midnight/midnight) If reserveBid_Period.timeInterval is equal to D, then the date and time of receipt must be before H-25', where H is the start time of the validity period the document relates to	A57 (Deadline limit exceeded/Gate not open)	Document reçu en dehors des périodes de transmission autorisées
D O	If the "domain.mRID" field must be equal to "10YFR-RTE-----C"	A80 (Domain invalid)	The "domain.mRID" field must be equal to "10YFR-RTE-----C"
O	reserveBid_Period.timeInterval not equal to 15 minutes	A04 (Time interval incorrect)	La période de validité doit être d'une durée de 15 minutes
O	Resolution	A41	La balise "resolution" doit être égale à "PT15M"
O	Position	A41	La balise "position" doit être égale à 1

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Scope of control (Document or Bid)	Error detected	Reason Code ENTSOE + description ENTSOE	Reason text TOPNIVEAU
O	Position	A49	Une seule balise "position" est autorisée
O	If two BidTimeSeries with identical mRIDs	A55 (Time series identification conflict)	Le mRID apparaît plusieurs fois dans le document
O	mRID bid not valid	A55 (Time series identification conflict)	mRID d'offre non valide
O	Business Type tag check	A62	La balise "businessType" doit avoir comme valeur "B74"
O	Name of RPG unknown	A64 (Resource Object Invalid)	L'EDR est inconnue dans le référentiel (balise "registeredResource.mRID")
O	Bid FAT tag check	A69	La balise "activation_ConstraintDuration.duration" indiquant la FAT de l'offre est manquante
O	Currency tag check	A69	La balise "currency_Unit.name" indiquant la devise est manquante.
O	Energy price unit of measure tag check	A69	La balise "energyPrice_Measure_Unit.name" indiquant l'unité de mesure des prix d'énergie est manquante
O	RPG tag check	A69	La balise "registeredResource.mRID" indiquant le code de l'EDR est manquante
O	Bid price tag check	A69	La balise "energy_Price.amount" indiquant le prix de l'offre est manquante
O	Connecting domain tag check	A80	La balise du domaine origine "connecting_Domain.mRID" doit avoir comme valeur "10YFR-RTE-----C" et un coding scheme à "A01"
O	Acquiring domain tag check	A80	La balise du domaine cible "acquiring_Domain.mRID" doit avoir comme valeur "10YFR-RTE-----C" et un coding scheme à "A01"
O	Time interval tag check	A81	La balise "timeInterval" de l'offre n'est pas cohérente avec celle du document, "reserveBid_Period.timeInterval"
O	Bid application period different from the application period of the document	A81 (matching period invalid)	Heures d'application incohérente
O	Vmax > certified Vmax	B09 (bid not accepted)	L'offre à la Hausse [ou à la baisse] est refusée car elle présente un volume maximum supérieur au volume maximum certifié
O	Overlapping bid volumes	B09 (bid not accepted)	L'offre à la hausse [ou à la baisse] est refusée car elle présente une superposition de plages de volumes avec une autre offre.
O	Bid price tag check	B51 (Outside price limits)	The bid price must contain a maximum of 2 decimal places ("energy_Price.amount")
O	Bid price tag check	B51 (Outside price limits)	Le prix de l'offre doit être entre -9999 et 99999 euros/MWh
O	Period tag check	Z28	Il ne peut y avoir qu'une seule balise "Period" par offres (BidTimeSeries)
O	RPG not certified in automatic Frequency Restoration Reserve	Z32	Cette EDR n'est pas apte à la RS (cf référentiel)
O	Error in RPG reference data	Z40	Traitement en échec, erreur lors de l'utilisation des données du référentiel

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Scope of control (Document or Bid)	Error detected	Reason Code ENTSOE + description ENTSOE	Reason text TOPNIVEAU
O	Missing bid for a RPG	Z51 (Bid creation)	L'offre à la Hausse [ou à la Baisse] est totalement absente. Une offre globale a été créée par RTE
O	Missing bid on a volume range	Z51 (Bid creation)	L'offre à la Hausse [ou à la Baisse] présente des plages de volumes discontinues. Une offre a été créée par RTE afin de la compléter
O	Currency tag check	Z52 (Expected value invalid)	La balise "currency_Unit.name" doit avoir comme valeur "EUR" (euros)
O	Energy price unit of measure tag check	Z52 (Expected value invalid)	La balise "energyPrice_Measure_Unit.name" doit avoir comme valeur "MWH" (megawatt heures)
O	Direction tag check	Z52 (Expected value invalid)	La balise "flowDirection.direction" doit être à "A01" ou "A02" (hausse ou baisse)
O	Quantities unit of measure tag check	Z52 (Expected value invalid)	La balise "quantity_Measure_Unit.name" doit avoir comme valeur "MAW" (megawatt)
O	Bid type tag check	Z52 (Expected value invalid)	La balise du type d'offre "auction.mRID" doit avoir comme valeur "AUCTION-aFRR"
O	RPG does not belong to the market participant's perimeter	Z53 (Entity not present in the market participant perimeter)	L'EDR ne figure pas dans votre périmètre (cf référentiel)
O	RPG not certified in automatic Frequency Restoration Reserve on the date of the bid	A64 (Resource Object Invalid)	L'EDR n'est pas (plus) active dans le référentiel à cette date d'application (balise "registeredResource.mRID")
O	Inconsistency between RPG in registeredResource tag and in the mRID and bid	Z52 (Expected value invalid)	L'EDR (balise "registeredResource.mRID") est incohérente avec le mRID de l'offre
O	Number of bids submitted for a RPG and for a direction > 3	A59	L'EDR (balise "registeredResource.mRID") est incohérente avec le mRID de l'offre
O	Number of bids submitted for a RPG and for a direction > 3	A59	L'EDR (balise "registeredResource.mRID") est incohérente avec le mRID de l'offre
O	The volume range max is < the min	Z52 (Expected value invalid)	L'EDR (balise "registeredResource.mRID") est incohérente avec le mRID de l'offre
O	The max or min of the volume range is decimal or negative.	Z52 (Expected value invalid)	Les volumes d'offres doivent être des entiers supérieurs ou égaux à 0
O	The bid FAT is < the certified FAT of the RPG or the bid FAT is > the regulatory limit.	Z52 (Expected value invalid)	La durée d'activation de l'offre doit se situer entre la durée d'activation certifiée de l'EDR dans le référentiel et la limite réglementaire