PICASSO – aFRR Energy Bid submission

Implementation guide

03/03/2022

OBJECTIVE

In the framework of the PICASSO project, some modifications in operational processes are taking place. Especially, a new tool for energy bidding (BIPLE) has been implemented by Elia. This presentation aims to help the understanding of the aFRR Energy Bidding submission process and related processes.

Before going through this presentation, please read the following documentation :

- The **T&C BSP aFRR** which is the reference for all contractual obligation. The T&C BSP aFRR has been published for public consultation : [20211208_Public_Consultation_on_amendment_of_the_TC_BSP_aFRR (elia.be)](elia.be)

- The Technical Guide for Implementation of the XXXXX (referred to as "Technical Guide" in this document) giving the IT specifications needed to put in place a B2B communication with Elia and/or the BIPLE user manual giving the indication to use the BIPLE web interface. Both are available on the following webpage : [Technical documentation concerning the provision of ancillary services (elia.be)](elia.be)

/!\ In case of incoherence between the T&C aFRR and this document, the T&C aFRR always prevails.
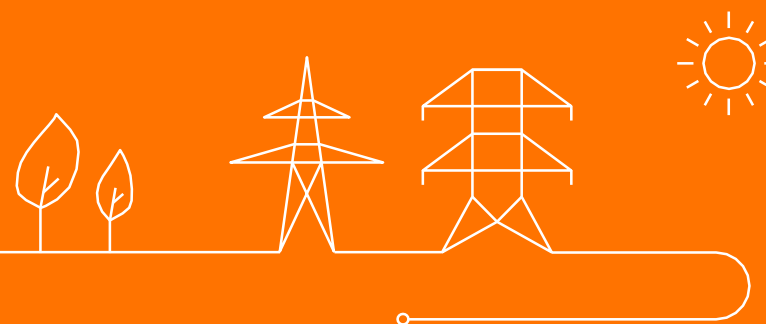
Plan

1. Concepts
2. Implementation
3. Processes
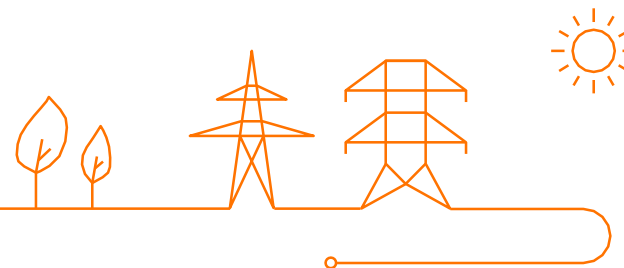
Concepts

- aFRR Energy Bids attributes
- Grouping and linking of aFRR Energy Bids

AFRR ENERGY BIDS
Attributes

An aFRR Energy Bid has the following attributes :

- **Quarter-hour** : indicates the Validity Period of the bid

- **Direction**: up or down

- **Contracted/Non-contracted** : indicates if the bid covers the contracted aFRR Obligation

- **Offered volume** : integer higher or equal to 1MW.
  - The volume must be lower than the sum of DPaFRR,max,up/down.
  - The sum of offered volume per Providing Group of DPpg must be lower or equal to 50MW

- **Price** : defined with two decimals. The price range can be limited according to contractual rules.

- **List of Delivery Points :** can be either a combination of DPsu(s) part of the same Technical Facility, either a combination of DPpg(s)

GROUPING AND LINKING OF AFRR ENERGY BIDS

The goal of the linking is to avoid unfeasible activations and jumps across bids that are representing the same (group of) Technical Unit(s). It has an impact on the way the bids are activated by ELIA.

It is possible to link aFRR Energy Bids across quarter-hours and across direction.

The linking is performed by grouping aFRR Energy Bids in bid groups. In the same bid group:
- Consecutive bids in the same direction are linked together
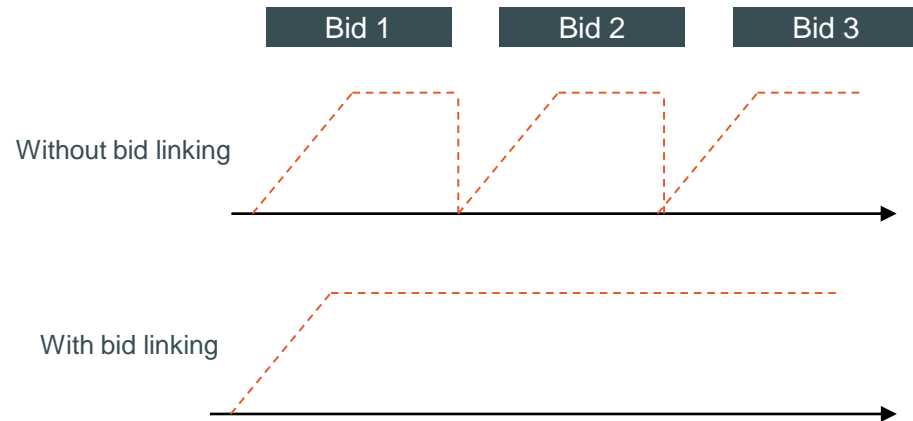- Bids up and down concerning the same quarter-hour are linked together.

Contractual rules :
- Per quarter-hour, only one bid up is allowed per bid group.
- Per quarter-hour only one bid down is allowed per bid group
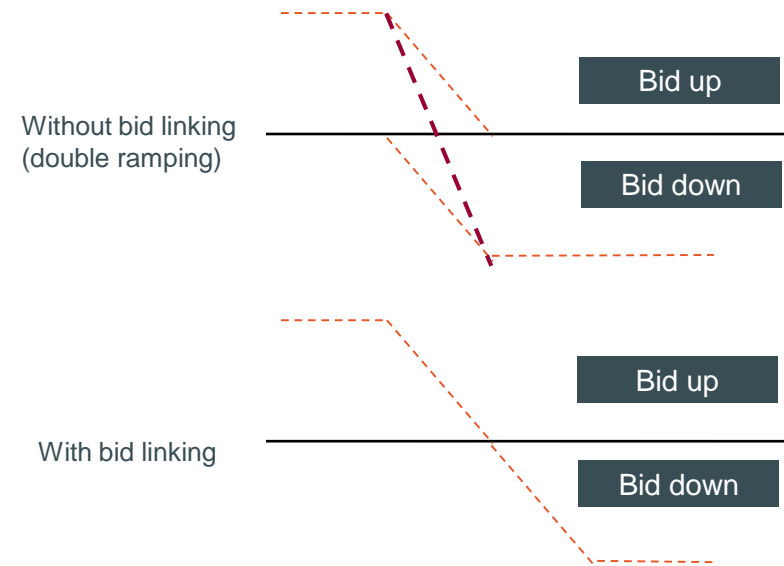- On DPsu, only bids of the same Technical Facility can be grouped.

GROUPING AND LINKING OF AFRR ENERGY BIDS
Consequences on activation

Linking across quarter-hour

Linking directions

Bid 1   Bid 2   Bid 3

Without bid linking

With bid linking

Without bid linking
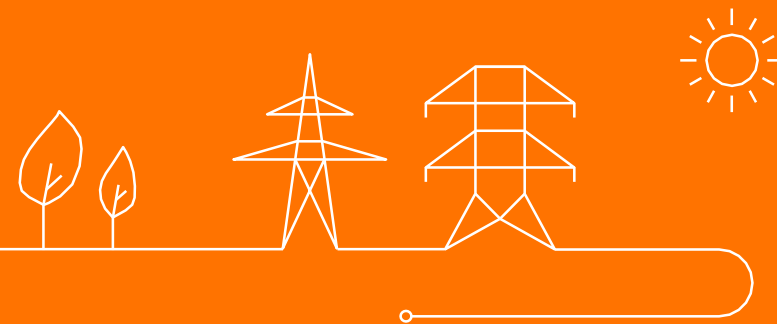(double ramping)

Bid up

Bid down

With bid linking

Bid up

Bid down

Implementation

- Submission of aFRR Energy Bids
- aFRR Energy Bid message structure
- Update of Energy Bid

SUBMISSION OF AFRR ENERGY BIDS
aFRR Energy Bid message

aFRR Energy Bids can be submitted and updated before BE GCT. In some cases, an update after BE GCT is allowed. These cases are described in the T&C BSP aFRR.

aFRR Energy Bid messages can be sent through two channels :

- exchanges of json messages via the **External Communication layer**. Information related to the external communication layer and the json messages can be found in the Technical Guide.

- sending of an excel file via the **BIPLE** web interface. Information related to the BIPLE web interface can be found in the BIPLE user manual.

Each message contains aFRR Energy Bids related to Day D for a specific Providing Group. Messages can be submitted from Day D-7 to Day D.

BIPLE PROD environment : https://biple.belgrid.net/
BIPLE DEMO environment : https://bipledemo.belgrid.net/

SUBMISSION OF AFRR ENERGY BIDS
Structuring the message

In order to structure his aFRR Energy Bid message, following steps must be followed:

1. The BSP splits his Delivery Points in **Providing Groups**.

2. The BSP sends a aFRR Energy Bids message for each Providing Group for a given day. The message contains all the **aFRR Energy Bids** related to the Delivery Points included in the Providing Group for that day.

3. The BSP groups aFRR Energy Bids in **bid groups** to avoid unfeasible activation.

4. Within the message, the bid groups must be split into one or several **timeseries**.

SUBMISSION OF AFRR ENERGY BIDS
Structuring the message - Providing Groups
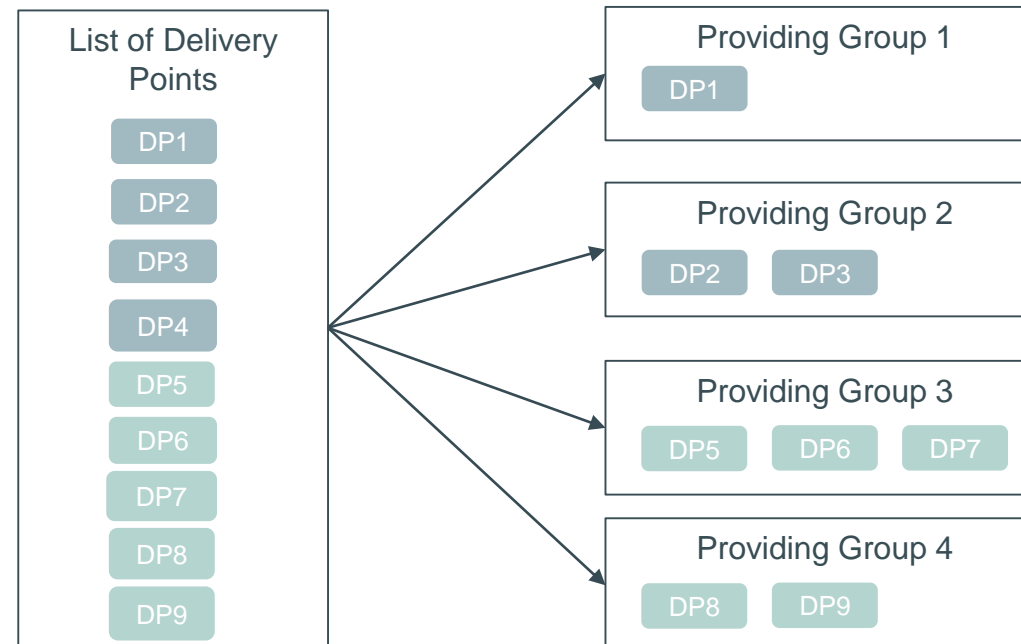
The BSP splits his Delivery Points in Providing Groups.

- Providing Groups of DPsu must be part of the same Technical Facility.
- Delivery Points DPsu and Delivery Points DPpg cannot be in the same Providing Group.
- A Delivery Point can only be part of one Providing Group
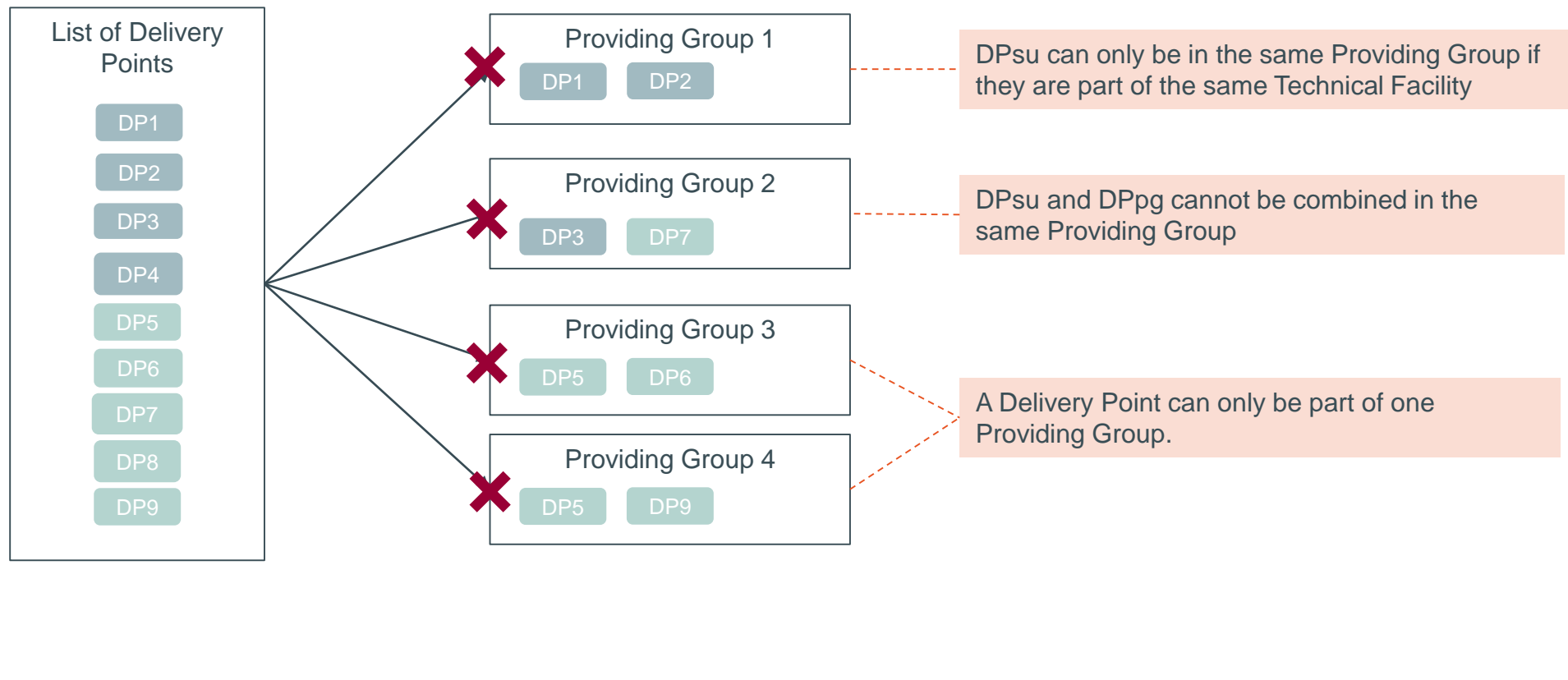
Example:

The BSP has 9 Delivery Points:
- *DP1-DP4 are Dpsu*
- *DP5-DP9 are DPpg*
- *DP2 and DP3 are part of the same Technical Facility (i.e. gas turbine and steam turbine of a CCGT)*

■ DPsu
■ DPpg

List of Delivery Points
- DP1
- DP2
- DP3
- DP4
- DP5
- DP6
- DP7
- DP8
- DP9

Providing Group 1
- DP1

Providing Group 2
- DP2
- DP3

Providing Group 3
- DP5
- DP6
- DP7

Providing Group 4
- DP8
- DP9

SUBMISSION OF AFRR ENERGY BIDS
Structuring the message - Providing Groups

List of Delivery Points

- DP1
- DP2
- DP3
- DP4
- DP5
- DP6
- DP7
- DP8
- DP9

Providing Group 1
DP1 DP2

DPsu can only be in the same Providing Group if they are part of the same Technical Facility

Providing Group 2
DP3 DP7

DPsu and DPpg cannot be combined in the same Providing Group

Providing Group 3
DP5 DP6

Providing Group 4
DP5 DP9

A Delivery Point can only be part of one Providing Group.

DPsu

DPpg

SUBMISSION OF AFRR ENERGY BIDS
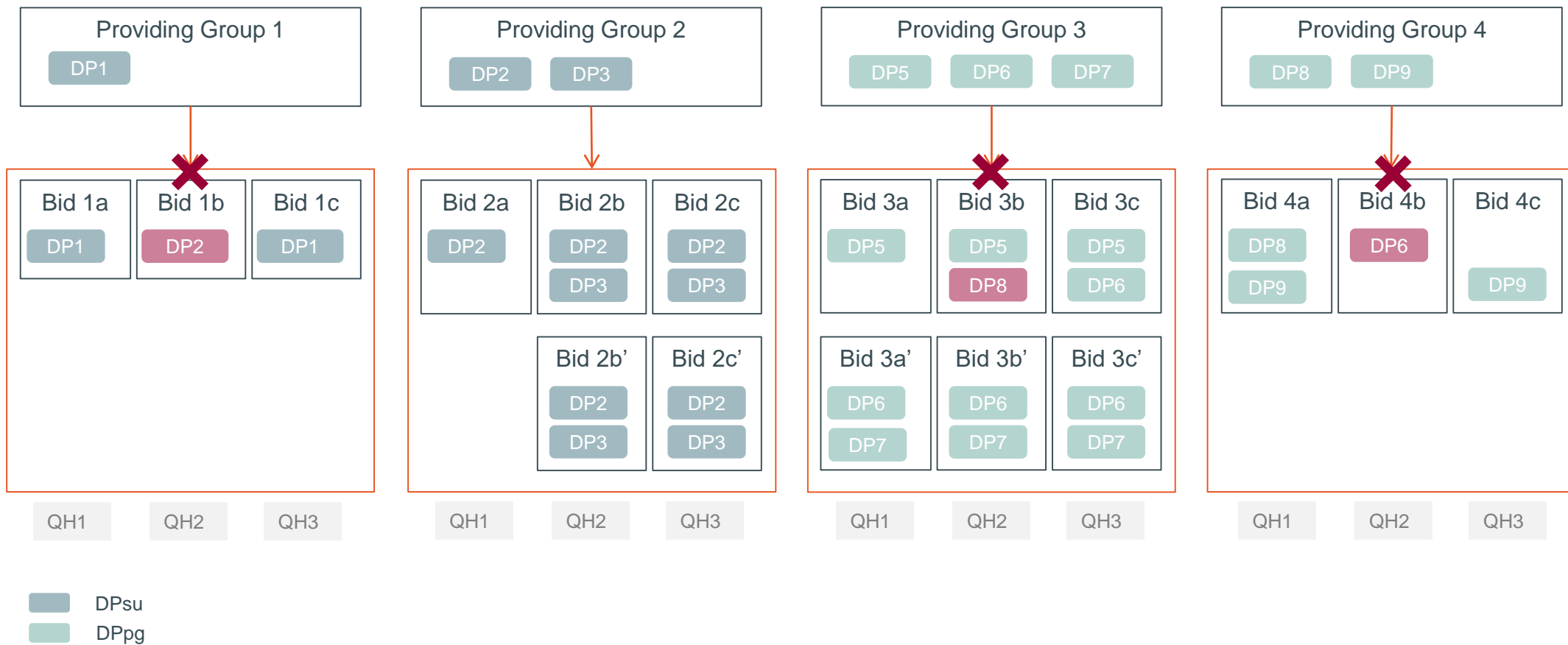## *Structuring the message - aFRR Energy Bids*

The BSP sends an aFRR Energy Bids message to BIPLE for each Providing Group for a given day. The message contains all the aFRR Energy Bids related to the Delivery Points included in the Providing Group for that day.

- aFRR Energy Bids must have the attributes and follow the rules listed in slide 5.

- Only Delivery Points part of the Providing Group can be listed in an aFRR Energy Bid of that Providing Group.

- The sum of offered volume per Providing Group of DPpg and per direction must be lower or equal to 50MW.
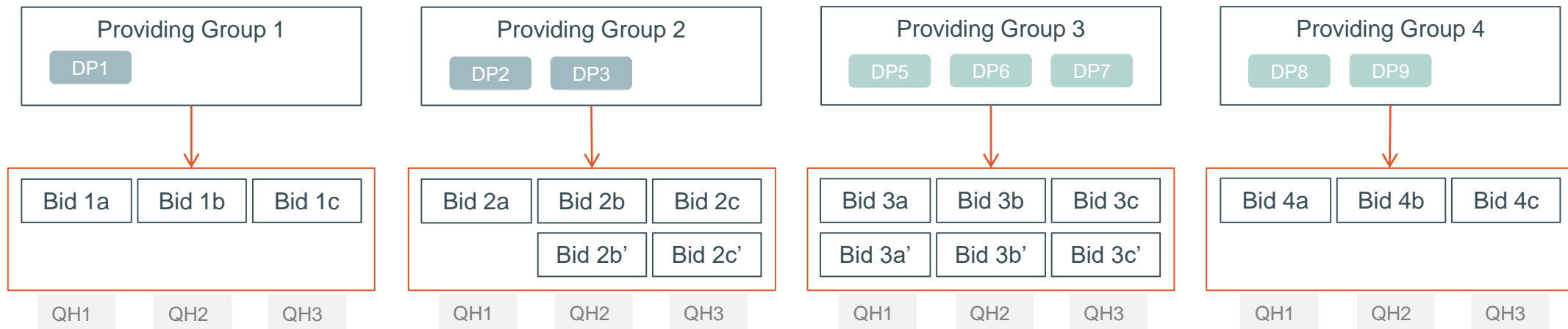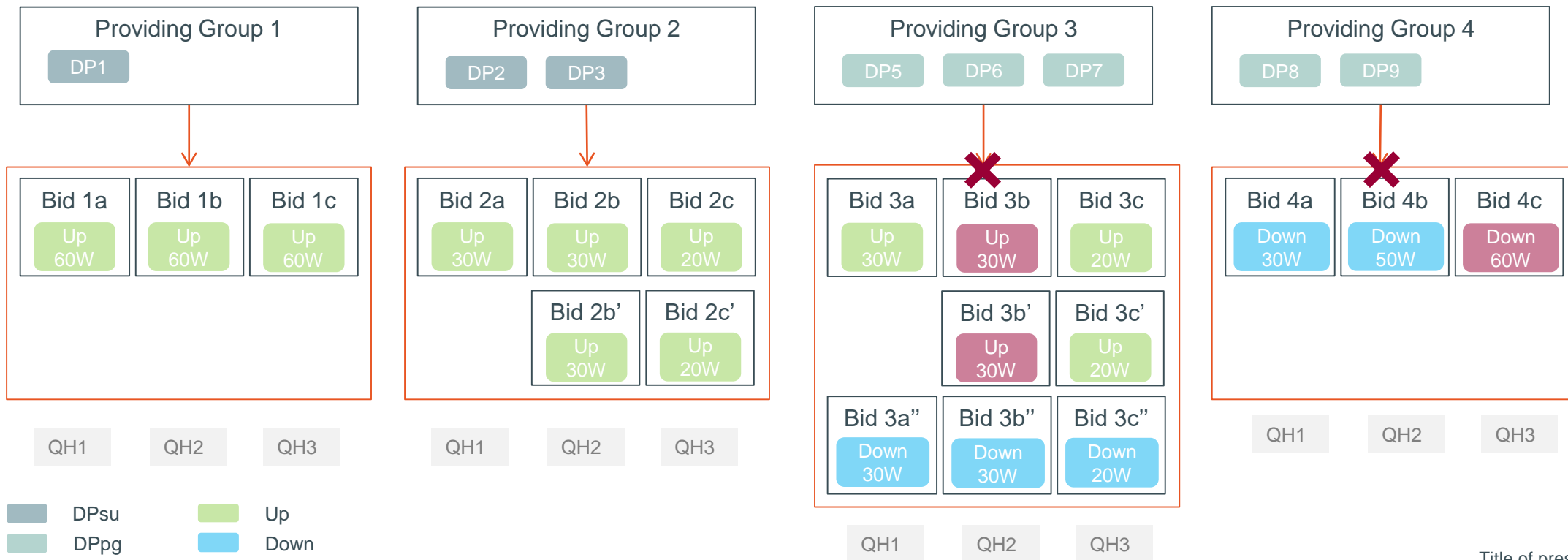
SUBMISSION OF AFRR ENERGY BIDS
Structuring the message - Rules on Delivery Points

Providing Group 1
DP1

Providing Group 2
DP2 DP3

Providing Group 3
DP5 DP6 DP7

Providing Group 4
DP8 DP9

Bid 1a — DP1
Bid 1b — DP2
Bid 1c — DP1

Bid 2a — DP2
Bid 2b — DP2 DP3
Bid 2c — DP2 DP3
Bid 2b' — DP2 DP3
Bid 2c' — DP2 DP3

Bid 3a — DP5
Bid 3b — DP5 DP8
Bid 3c — DP5 DP6
Bid 3a' — DP6 DP7
Bid 3b' — DP6 DP7
Bid 3c' — DP6 DP7

Bid 4a — DP8 DP9
Bid 4b — DP6
Bid 4c — DP9

QH1 QH2 QH3   QH1 QH2 QH3   QH1 QH2 QH3   QH1 QH2 QH3

DPsu
DPpg

SUBMISSION OF AFRR ENERGY BIDS
Structuring the message - Rules on offered volume

- Providing Group 1 and 2 are DPsu thus not concerned
- In Providing Group 3, the sum of offered volume on upward bids for QH2 is 60MW > 50MW. The rule is not satisfied.
- In Providing Group 4, the sum of offered volume on downward bids for QH3 is 60MW > 50MW. The rule is not satisfied.
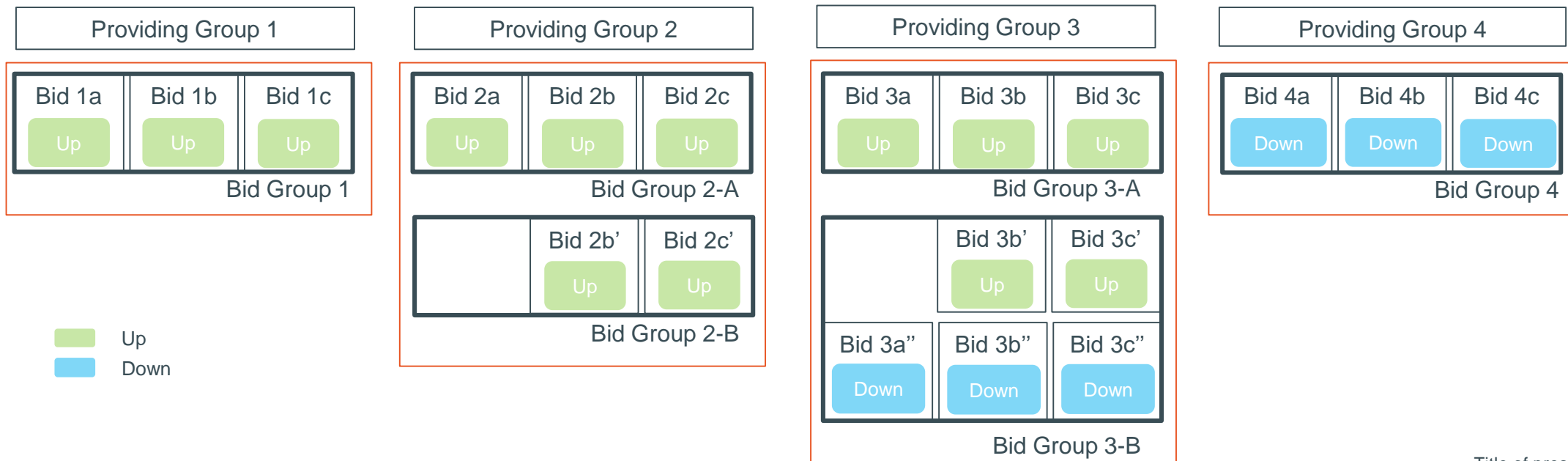
SUBMISSION OF AFRR ENERGY BIDS
Structuring the message - Grouping of Energy Bids

As mentioned in slide 6, aFRR Energy Bids can be grouped in bid groups to avoid unfeasible activation. The BSP can group the bids in a bid group via a same bid group ID attribute. Energy Bids with the same bid group ID across several days are also linked together.
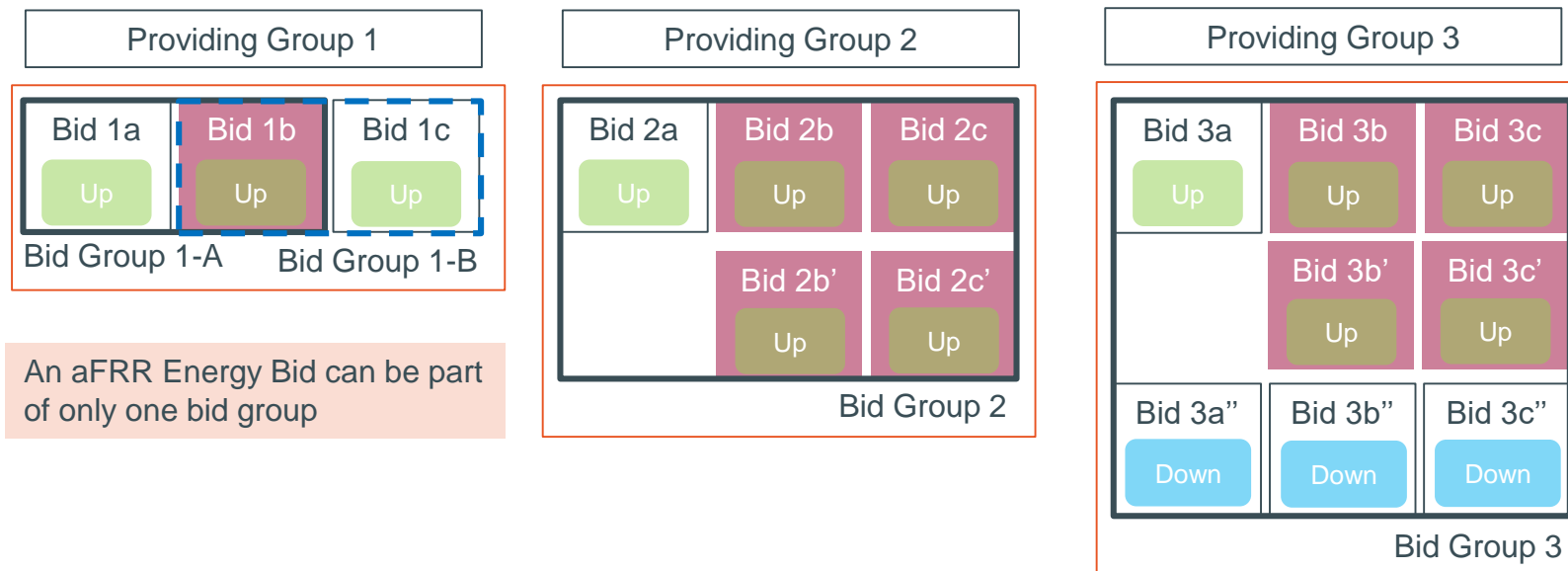
- An aFRR Energy Bid can only be part of one bid group

- Only aFRR Energy Bids part of the same Providing Group can be linked together via a bid group

- Only one bid per direction and per quarter-hour is allowed in one bid group

SUBMISSION OF AFRR ENERGY BIDS
Structuring the message - Grouping of Energy Bids

Providing Group 1

Bid 1a	Bid 1b	Bid 1c
Up	Up	Up

Bid Group 1-A   Bid Group 1-B

An aFRR Energy Bid can be part of only one bid group

Providing Group 2

Bid 2a	Bid 2b	Bid 2c
Up	Up	Up
	Bid 2b'	Bid 2c'
	Up	Up

Bid Group 2

Providing Group 3

Bid 3a	Bid 3b	Bid 3c
Up	Up	Up
	Bid 3b'	Bid 3c'
	Up	Up
Bid 3a''	Bid 3b''	Bid 3c''
Down	Down	Down

Bid Group 3

Up
Down

Only one aFRR Energy Bid per quarter hour and per direction.

SUBMISSION OF AFRR ENERGY BIDS
Structuring the message - Timeseries

When sending the aFRR Energy Bids message, the bid groups have to be split into several timeseries :

- aFRR Energy Bids in a timeserie must have the same direction

- Only contracted OR non-contracted aFRR Energy Bids in a timeserie
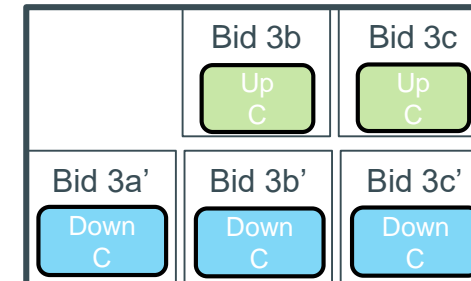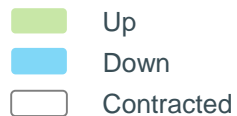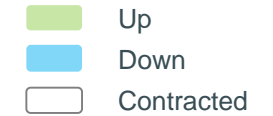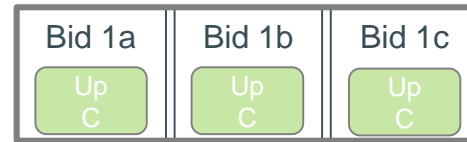

Bid Group 1
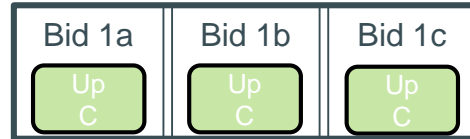
Bid 1a	Bid 1b	Bid 1c
Up C	Up C	Up C

1 timeserie

Bid Group 2

Bid 2a	Bid 2b	Bid 2c
Up NC	Up NC	Up C

2 timeserie

Bid Group 3

	Bid 3b	Bid 3c
	Up C	Up C
Bid 3a'	Bid 3b'	Bid 3c'
Down C	Down C	Down C

2 timeseries

Legend:
- Up (green)
- Down (blue)
- Contracted (white box)

SUBMISSION OF AFRR ENERGY BIDS
Structuring the message - Timeseries

Legend:
- Up (green)
- Down (blue)
- Contracted (white)

Bid Group 1

Bid 1a	Bid 1b	Bid 1c
Up C	Up C	Up C

→

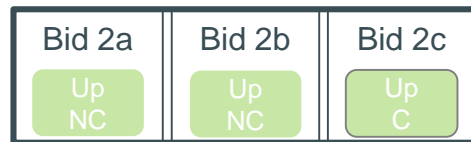| Bid 1a	Bid 1b	Bid 1c
Up C	Up C	Up C
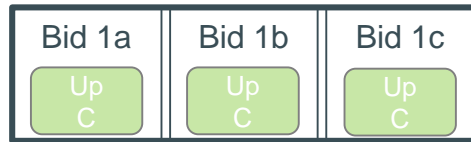
Timeserie 1 (up contracted)

Bid Group 2

Bid 2a	Bid 2b	Bid 2c
Up NC	Up NC	Up C

→

Bid 2c
Up C
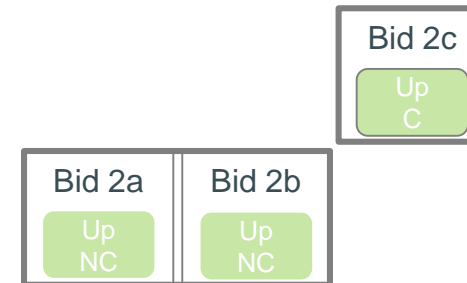
Timeserie 2-A (up contracted)

Bid 2a	Bid 2b
Up NC	Up NC

Timeserie 2-B (up non-contracted)

Bid Group 3

	Bid 3b	Bid 3c
	Up C	Up C
Bid 3a'	Bid 3b'	Bid 3c'
Down C	Down C	Down C

→

Bid 3b	Bid 3c
Up C	Up C
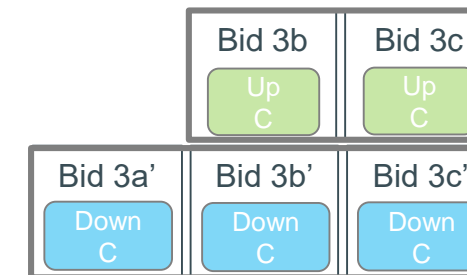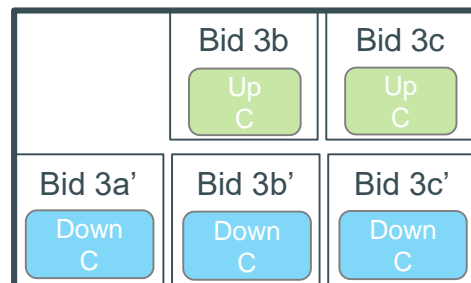
Timeserie 3-A (up contracted)

Bid 3a'	Bid 3b'	Bid 3c'
Down C	Down C	Down C

timeserie 3-B (down contracted)

AFRR ENERGY BIDS MESSAGE STRUCTURE

A bid message (ReserveBid_MarketDocument) contains all the timeseries related to a Providing Group and one day. Each timeserie consists in a list of aFRR Energy Bids (called points). Bid groups are identified via a Bid Group ID at the level of the timeserie.

Specifications of the ReserveBid_MarketDocument message can be found in the Technical Guide.
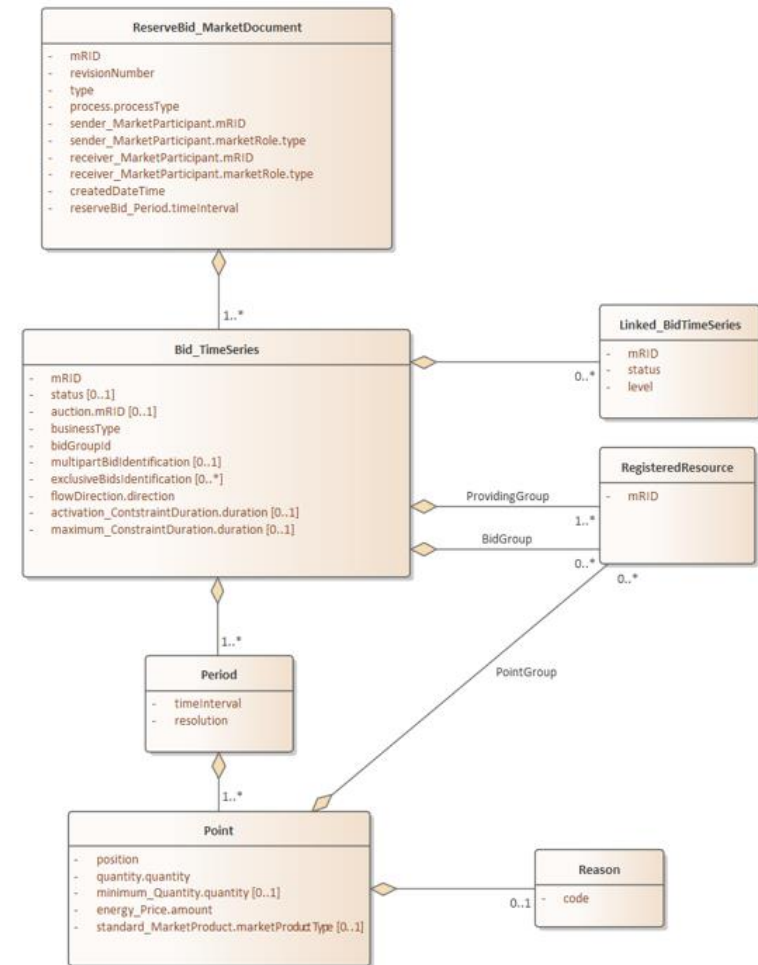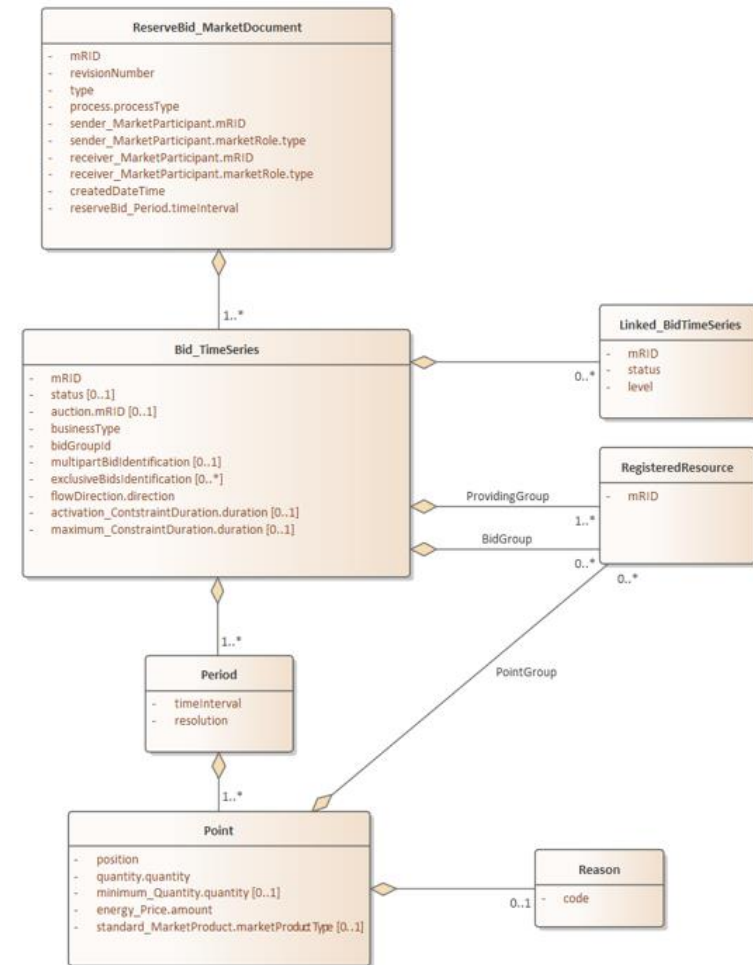
AFRR ENERGY BIDS MESSAGE STRUCTURE
General structure

The aFRR Energy Bid message is covering one Providing Group and one day* and has the following attributes :

- **mRID** of the message : the mRID must be reused when updating the aFRR Energy Bids concerned

- **revisionNumber** : the revisionNumber must increase when updating the aFRR Energy Bids concerned

- General information about BSP and Market Parties

- **List of timeseries** : aFRR Energy Bids should be grouped in timeseries. A timeserie is composed of aFRR Energy Bids, exclusively contracted or non-contracted, concerning different quarter-hours, having the same direction and being in the same bid group.
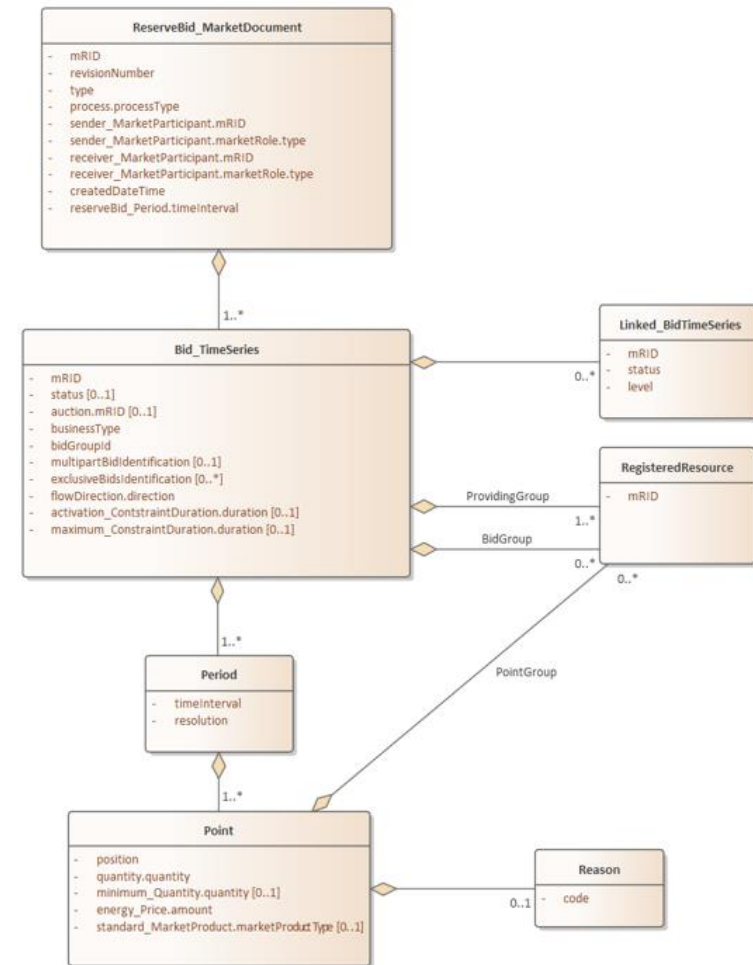
AFRR ENERGY BIDS MESSAGE STRUCTURE
Timeseries

A timeserie has the following attributes :

- **mRID** of the timeserie : must be reused when updating the aFRR Energy Bids concerned.

- **status** : active or cancelled timeserie

- Auction.mRID : **contracted** (1) or **non-contracted** (0)

- **bidGroupId**: ID of the bid group. Several timeseries can have the same bid group ID while respecting the rules of slide 16.

- **ProvidingGroup**: list of Delivery Points in the Providing Group. The list should be the same across all timeseries of the message.

- **BidGroup**: list of Delivery Points related to the Bid Group. The list should be the same across all timeseries having the same bid group ID. Optional

- **Direction**: Up or Down
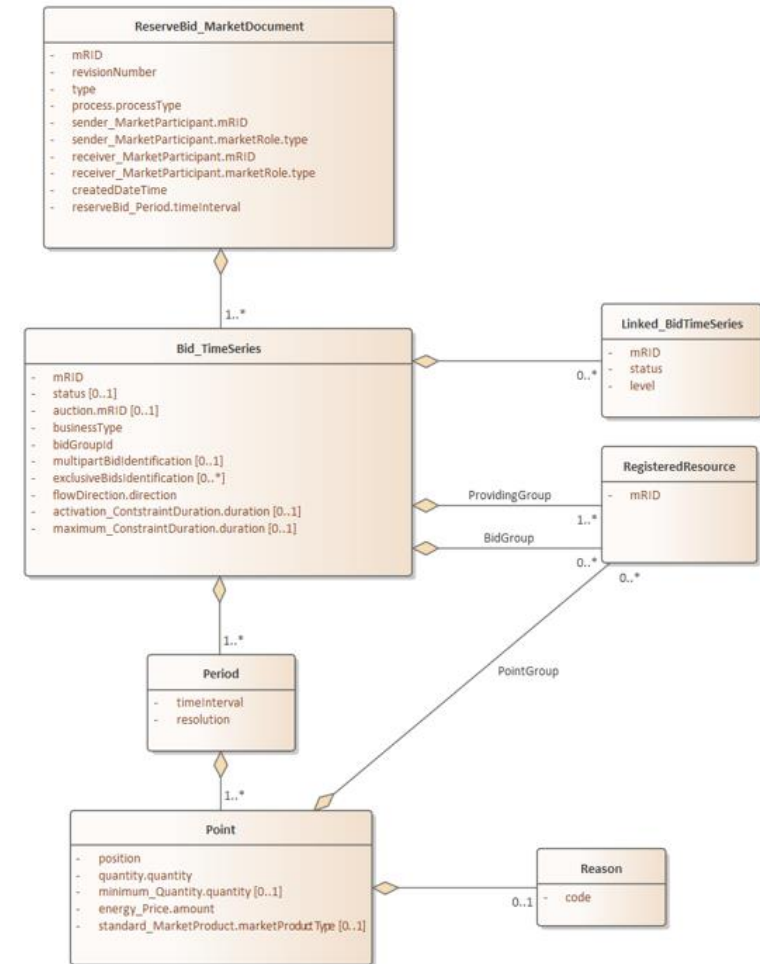
- List of **aFRR Energy Bids**

AFRR ENERGY BIDS MESSAGE STRUCTURE
aFRR Energy Bids

An aFRR Energy Bid (point in the message) has the following attributes :

- **Quarter-hour** (position)

- **Offered volume** (quantity)

- **Price**

- **List of Delivery Points (PointGroup)** : optional*

- **Reason** : being "Forced Outage", "Internal Congestion" or "Others". Optional but mandatory in case of update of the bids after BE GCT or in case a bid has to be put to unavailable.

*The list of Delivery Points is optional. If nothing is indicated, the Delivery Points listed in the BidGroup are considered. If nothing is indicated in the BidGroup, the Delivery Points listed in the Providing Group are considered. This avoids repeating the information for each quarter-hour.

UPDATE OF ENERGY BIDS
Energy Bid message

In order to update aFRR Energy Bids message, the BSP must sent a new version of message containing the updates while respecting the following rules :

- The same mRID should be used

- The revisionNumber of the message must be increased

- All timeseries included in the previous version of the message must also be listed in the updated version, even timeseries that were not updated or were cancelled.

- All aFRR Energy Bids as of the current quarter-hour must be included. Previous quarter-hours are allowed but will be ignored by Elia.

UPDATE OF ENERGY BIDS
How to add and update aFRR bids ?

How to update aFRR Energy Bids ?

Attributes at "point" level in an aFRR Energy Bid can be updated by replacing these attributes in an updated message. The following attributes can be updated :

- Offered volume

- Price

- List of Delivery Point

- Reason

How to add new aFRR Energy Bids ?

In order to add new aFRR Energy Bids to a message, the BSP may :

- Add aFRR Energy Bids to an existing timeserie (adding quarter-hours)

- Add one or several new timeseries containing the new aFRR Energy Bids

UPDATE OF ENERGY BIDS
How to cancel a bid or put it unavailable ?

How to cancel a bid ?

Cancelling an aFRR Energy Bid is only possible before BE GCT. Depending on the situation, the BSP has two ways to cancel its bids :

- If all aFRR Energy Bids of a timeserie need to be cancelled, the whole timeserie can be cancelled via the "Cancelled" status (see slide 22).

- If only part of the aFRR Energy Bids of a timeserie need to be cancelled, the concerned aFRR Energy Bids (points) must be remoded from the timeserie.

How to put a bid to unavailable ?

The BSP can put a bid to unavailable by sending an update of the aFRR Energy Bid with a volume of 0MW. This is only possible if a reason code is associated with the aFRR Energy Bid update.

In case of update before GCT, only the "Forced Outage" reason is allowed.

Processes

- Submission and update
- Notification of Forced Outage
- Congestion Management
- aFRR Obligation monitoring
- Receiving a Notification
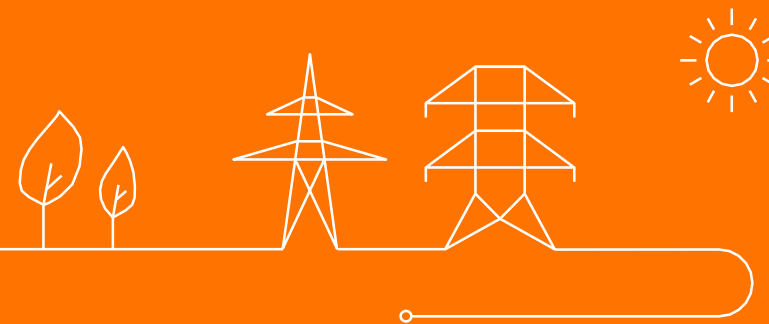
SUBMISSION AND UPDATE
Submission and update of aFRR Energy Bids (1/2)

- A ReserveBid_MarketDocument message* is used to submit, update or cancel aFRR Energy Bids.

- The aFRR Enegy Bid message will go through the validation rules and will be answered by Elia through the Confirmation_MarketDocument message.

- Following answers are possible: "fully accepted", "fully rejected" or "accepted with warnings".

- In case the message is "fully accepted", all aFRR Energy Bids are validated and considered for activation.
  In case the message is "fully rejected", all aFRR Energy Bids are rejected. A message is fully rejected as soon as one aFRR Energy Bid is rejected.
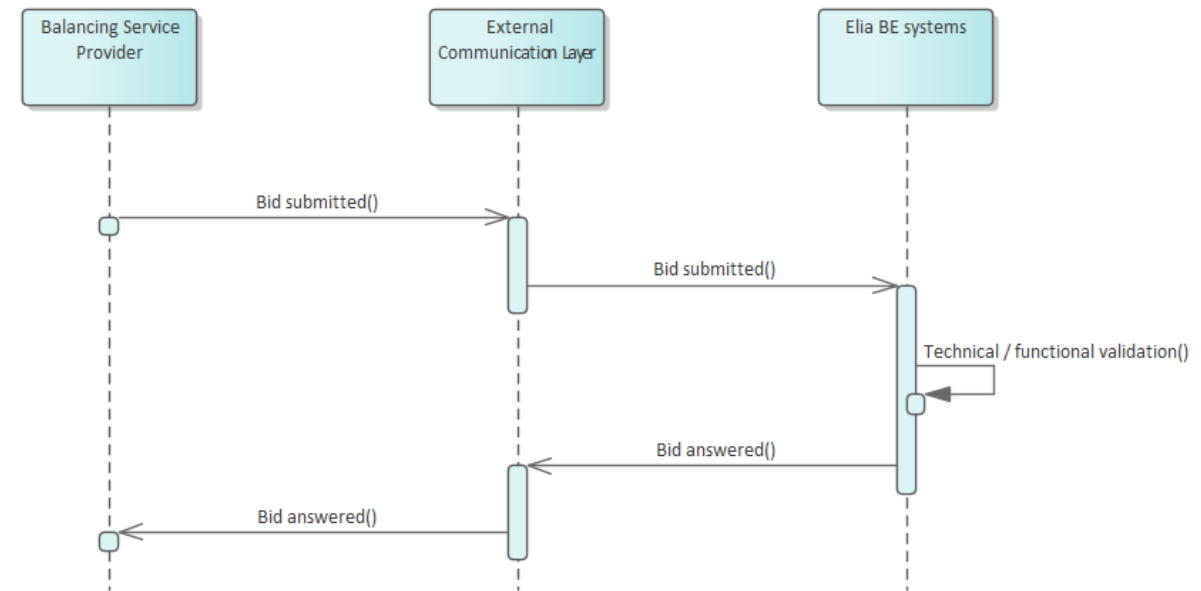
Alternatively, the BSP may use the BIPLE interface to send the message via an excel file. In that case, no answer will be send by Elia via the External communication layer but the BSP will get the validation status directly in the BIPLE interface.

SUBMISSION AND UPDATE
Submission and update of aFRR Energy Bids (2/2)

The message can be "accepted with warnings" in following cases :

- The price is out of a range fixed by Elia. The BSP should check the correctness of the price.
  All aFRR Energy Bids are considered valid by Elia.

- The offered volume of a non-contracted bid in a Red Zone is increased (see Red Zones process – slide 34). All aFRR Energy Bids are considered valid by Elia.

- There is an update of an aFRR Energy Bid after BE GCT. The concerned aFRR Energy Bid(s) are not directly be considered valid by Elia (see slide 30). All other aFRR Energy Bids are considered valid by Elia.
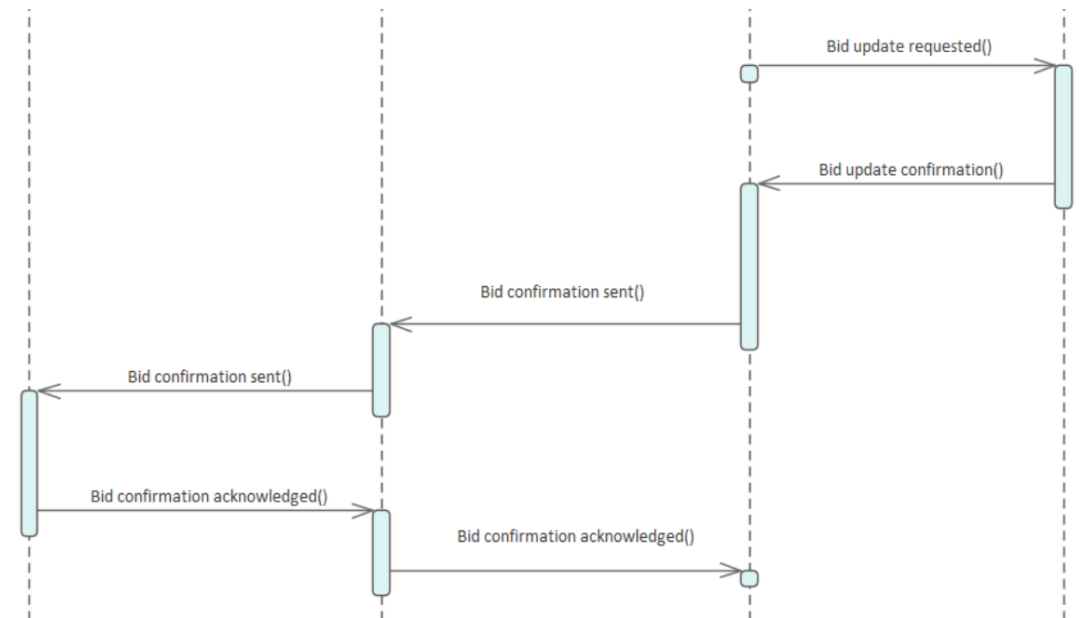
SUBMISSION AND UPDATE
Update of aFRR Energy Bids after BE GCT

As defined in the T&C aFRR, the BSP is allowed to put an aFRR Energy Bid to unavailable or to decrease the offered volume of an aFRR Energy Bid after BE GCT and before 5' before the Validity Period.

In case of update after BE GCT, the message sent by the BSP will be "Accepted with warnings". The reason of the warning is included in ELIA's answer to the bid submission. (see slide 29)

In that case, the bid is not directly validated. Until the bid is validated, the update will not be considered in the activation process and the initial bid remains valid.

After submission and before the start of the Validity Period of the bid, the bid will be validated or rejected and the BSP is informed via the BidConfirmation_MarketDocument with a status "Validated" or "Not Validated". The BSP must acknowledge the reception of the message via a Acknowledgement_MarketDocument.

SUBMISSION AND UPDATE
Submission and update of aFRR Supporting Group

- A BackupDeliveryPoints_MarketDocument message is used to submit or update the aFRR Supporting Group.

- The aFRR Supporting Group message will go through the validation rules and will be answered by Elia through the Confirmation_MarketDocument message.

- Following answers are possible: "fully accepted" or "fully rejected"
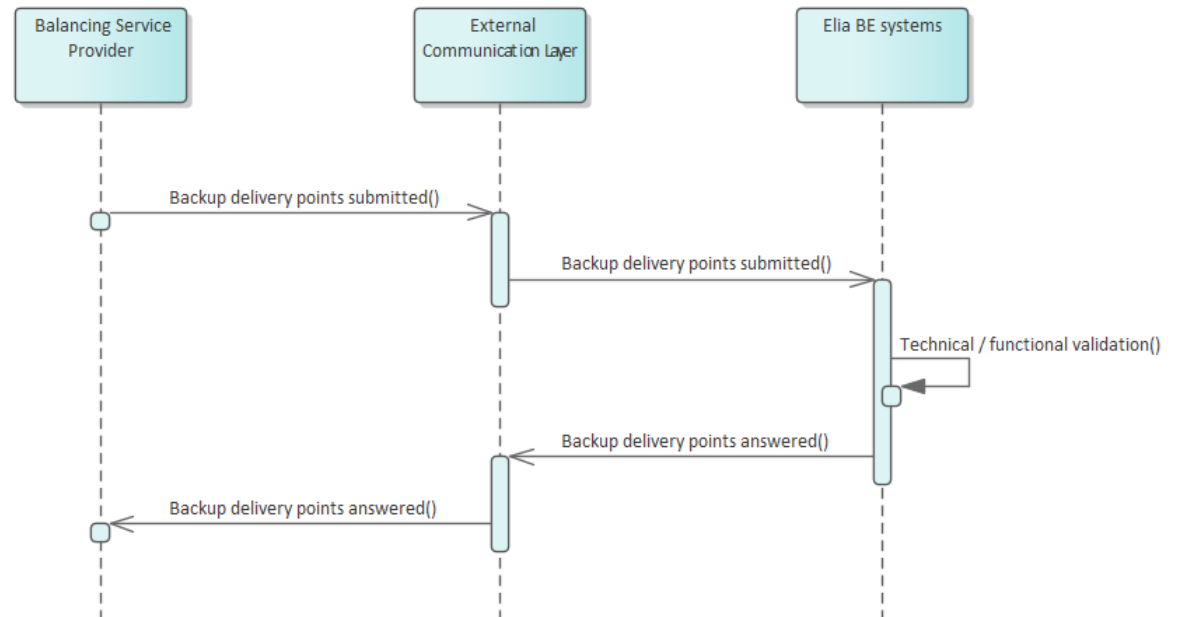
*Alternatively, the BSP may use the BIPLE interface to send the message via an excel file.*

SUBMISSION AND UPDATE
Submission of aFRR Prequalification Bid

A prequalification bid can be submitted very easily via the BIPLE web interface.

Alternatively, the BSP may submit the prequalification bid via the External communication layer:

- A ReserveBid_MarketDocument message is used to submit or update an aFRR Prequalification Bid

- The prequalification bid message will go through the validation rules and will be answered by Elia through the Confirmation_MarketDocument message.

- Following answers are possible: "fully accepted" or "fully rejected"
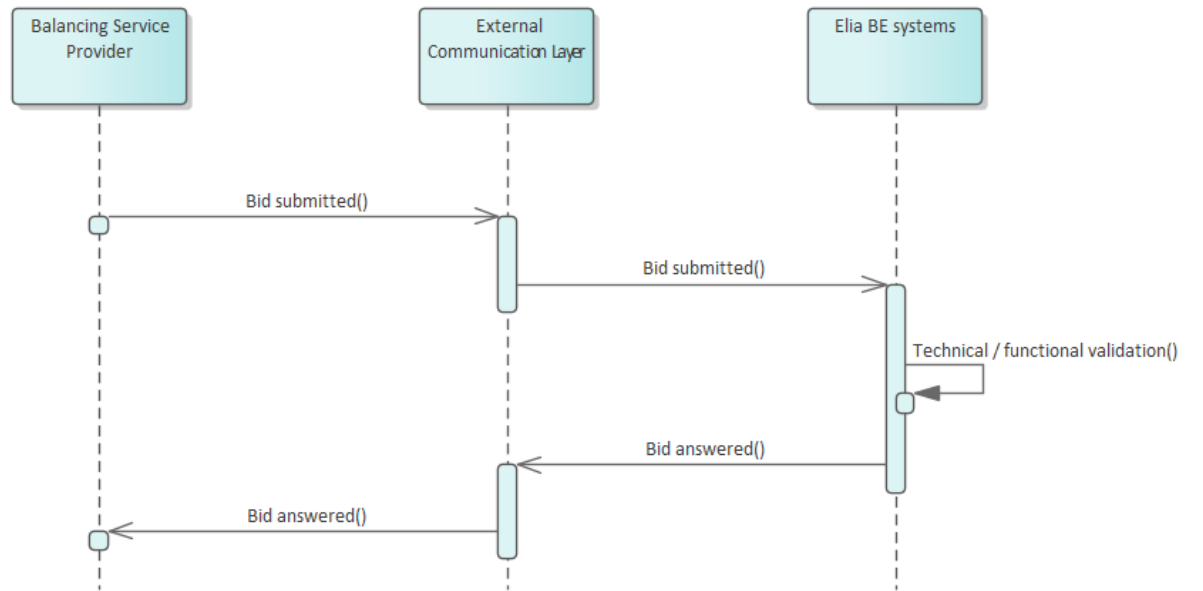
NOTIFICATION OF FORCED OUTAGE

In case a Delivery Point of the BSP is subject to a Forced Outage impacting one or several Energy Bids, the BSP must update his aFRR Energy Bids accordingly by indicating the reason of the update (being "Forced Outage").

In case a Forced Outage occurs, the BSP must update the impacted aFRR Energy Bids by decreasing the offered volume or putting his bid to unavailable (see slide 25 and 26). In that case, the BSP is also allowed to modify his (contracted) bids after BE GCT (see slide 30). The reason ("Forced Outage") must be indicated.

The notification of Forced Outage must be used to inform ELIA of an aFRR Energy Bid impacted by a Forced Outage (see T&C aFRR).

CONGESTION MANAGEMENT

Elia will inform the BSP about Red Zones by sending a CRILevel_MarketDocument message.
The message will indicate per impacted Electrical Zone: the congestion direction, the list of impacted aFRR Energy Bids (which could be put as unavailable) and the list of impacted Delivery Points. The BSP must acknowledge the reception of the message via a Acknowledgement_MarketDocument..

As described in the T&C aFRR, if a contracted upward (downward) aFRR Energy Bid is submitted or if the volume of a contracted existing upward (downward) aFRR Energy Bid is increased, the bid message will be fully rejected. In case of volume increase of a non-contracted aFRR Energy Bids in a Red Zone, the BSP will be warned via the Elia's answer (see slide 29).

If an aFRR Energy Bid is put as unavailable for congestion reason, Elia notifies the BSP at BE GCT via a "CRI Filtering" Notification_MarketDocument (see slide 37). The message indicates per Electrical Zone: the direction, the CRI level, the impacted energy bids (and impacted Delivery Points listed in the bids) and the impacted Delivery Points of the aFRR Supporting Group*. The BSP must acknowledge the reception of the message via a Acknowledgement_MarketDocument.

*Delivery Points of the aFRR Supporting Group are referred as "Back-up" Delivery Points in the Technical Guide and the BIPLE User Manual.

AFRR OBLIGATION MONITORING

If the BSP has an aFRR Obligation, as described in the T&C aFRR, the BSP must cover it by sendng contracted aFRR Energy Bids. The submission is done via the general submission of energy bids (slide 28).

In case, at 3PM D-1, the aFRR Obligation of the BSP is not met, Elia informs the BSP via a "Missing aFRR Made Available" Notification_MarketDocument message (see slide 37). The BSP must acknowledge the reception of the message via a Acknowledgement_MarketDocument.

RECEIVING A NOTIFICATION

Several types of notifications are send to the BSP:

- "CRI Filtering" when an aFRR Energy Bid is filtered out due to a Red Zone. (slide 34)

- "Missing aFRR Made Available" when the aFRR Obligation of the BSP is not met. (slide 35)

Notifications can be received via email and/or via a Notification_MarketDocument message. The general structure of the message is shown in the Technical Guide. The specifications of the message for each type of notification are described in the "Notification Service" tool that is made available by Elia to the BSP*.

*The Notification Service tool will be available as of the PICASSO go-live. In the meantime, all specifications are grouped in an excel file that will be communicated by email to the BSP.

Thank you.