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Subject: Flexcity's view on the Formal public consultation on Terms and Conditions for balancing service providers for Automatic Frequency Restoration Reserve (aFRR)

Dear Sir or Madam

Flexcity would like to thank Elia for giving us the opportunity on participating in the formal consultation. We also would like to congratulate Elia with the work done. The aFRR product can be seen as the most complex balancing product with many stakeholders holding sometimes very different perspectives and opinions on how to organise this product. The way Elia has handled this and has adjusted the original design note based on stakeholder feedback (the two-tender solution for example) is exemplary.

However, as the devil is in the details, there are some particular elements that are of great concern to us. Below we try as clearly as possible to illustrate these concerns and offer alternatives. We are available to further clarify and discuss these points through video conferencing.

1) Penalties Related to aFRR made available

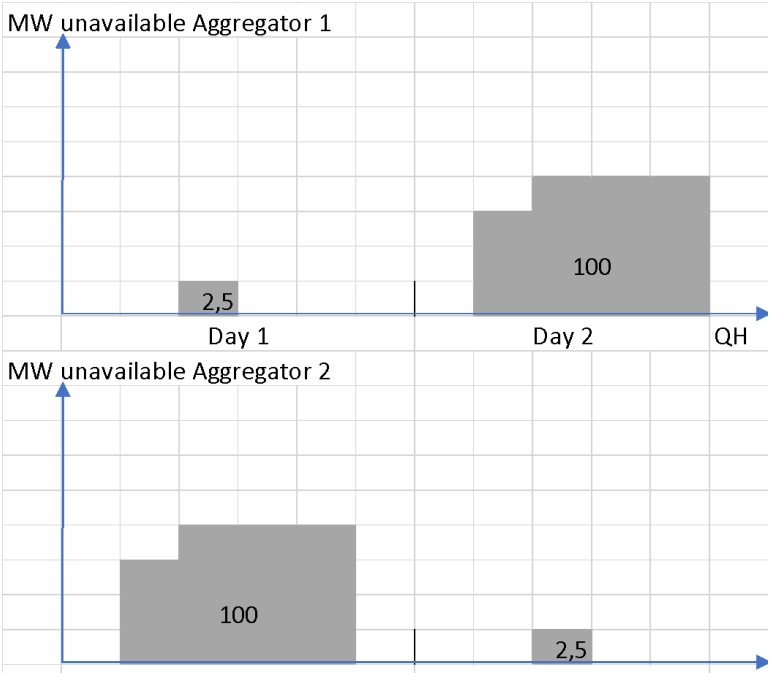
Flexcity is in favour of a fair penalty system which gives all market parties the correct financial and contractual incentive to deliver a correct and reliable service and which does not favor any specific technology over another.

Flexcity is of the opinion that the proposed non-linear penalty system does not meet the above requirements.

The system is not fair

The non-linearity introduced in the penalty by the factor $\#CCTU_{non\text{-}compliant}$ leads to penalties which are regarded as unfair.

Suppose two aggregators which have reported the outages as indicated in the figure to the right. Both reported two non-compliant CCTU's on two consecutive days. Both aggregators reported exactly the same "$MW_{not\ made\ available}$" for those CCTU's: 2.5MW/h and 100MW/h however in the opposite order for both aggregators.



If we now calculate the penalty for both aggregators (PaFRR Made Available) with CP_{WA} of 3.5€/MW/h (see table below) we find that

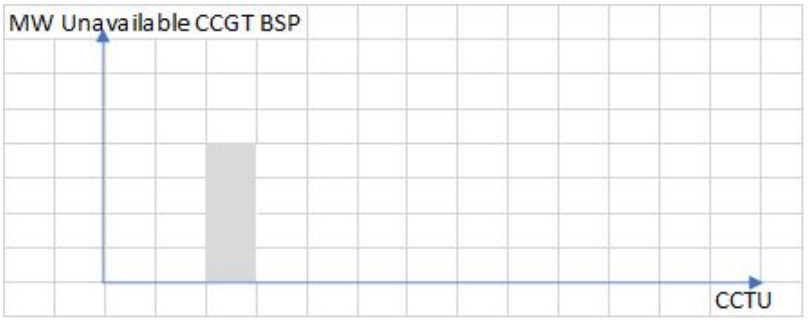
the aggregator 1 needs to pay almost double of aggregator 2 despite having an identical unavailable volume and an identical number of non-compliant CCTU's.

The difference caused by the non-linearity cannot be interpreted as fair to Aggregator 1.

PaFRR Made Available			
Aggregator	**CCTU 1**	**CCTU 2**	**SUM**
1	8,75 €	700,00 €	**708,75 €**
2	350,00 €	17,50 €	**367,50 €**

The penalties are indirectly not technology neutral

A large unit as a CCGT is rarely unavailable. But, if it is, there is a very large unavailable capacity for a limited period of time. The graph below shows a CCGT being fully unavailable during 1 CCTU. Seen the unavailability is limited to one CCTU it will pay $MW_{\text{not made available}} * C_{PWA}$.



For an aggregator working with DSM (Demand Side Management) the situation is very different. There is a higher probability that at least one participant will have a technical issue compared to the case with a CCGT(just because there are more participants) however, in the case of an aggregator it will not lead to high unavailable capacities just because there are multiple participants. We can thus say, compared with a CCGT, that unavailabilities can be more frequent but much smaller as for a CCGT.

In the picture below the MW Unavailable for a DSM BSP are shown. The unavailable volume (the surface area of the gray blocks) is identical to the one of the CCGT however, because the same unavailable volume is spread out over multiple CCTU's the penalty will be, for the same C_{PWA}, 2.5 times the penalty for the CCGT. Flexcity fails to understand why this difference in treatment can be justified as there are no technical reasons for ELIA to prefer big single shot outages over smaller but more frequent availabilities. This is also counter productive to the ambition of ELIA to open the aFRR market to non-traditional players as pools of smaller units.

Market parties don't have correct incentive

The non-linearity introduced by having the factor $\#CCTU_{non\text{-}compliant}$ is not only unfair, it is also counterproductive in providing a penalty system which gives all market parties the correct financial and contractual incentive to deliver a correct and reliable service.

The reporting of small (only few MW's) and temporary (few quarter-hours) is disproportionally penalized as, when followed by a second outage, it would automatically double the second penalty. This makes this scheme largely unpredictable, potentially reducing the interest in participation into the service.
This in turn might lead to gaming behaviour as the potentially disproportionate cost of reporting might be offset against the probability of an activation test and the consequence of failing this. This in turn leads to unfair competition between parties and must be avoided.

Flexcity would like to refer to their response to the mFRR consultation in which a counter proposal was made for this specific penalty.

2) Availability control: availability test

Flexcity is very concerned with the proposal around the availability test and the linked penalty scheme. As explained in the next few paragraphs the proposal is very similar to the mFRR product. However, as mFRR and aFRR are very different products, we fear we end up with a penalty system that can lead to disproportionate penalties and might effectively keep assets from entering the market which are perfectly capable of delivering a correct aFRR service. Flexcity strongly requests to review the Availability Control mechanism.

Frequency of the test
For mFRR Flexcity fully understands ELIA's reasoning behind a frequent test (between 6 to 12 times per rolling 12 months). The product, especially mFRR Flex, is only rarely called. Therefore ELIA needs to make sure that, in the rare case of activation, the volume ELIA has been paying for to be available is indeed available.

A similar reason applies to FCR. The product is called very often however the maximum capacity, corresponding with a frequency deviation of 200mHZ, is a rare occurrence.

The situation for aFRR is very different from FCR and mFRR. The product is heavily used with the fully contracted volume being saturated multiple times per day. For Flexcity it does not make sense to withhold the same test frequency as for mFRR and FCR if a BSP would frequently demonstrate their capability to reach the max aFRR by just delivering the service . Seen the costs associated with a test and the risk of a disproportionate penalty (see the next two sections) the number of possible activation tests are an important factor for both aggregators as our customers and their willingness to participate in the service.

Flexcity would therefore make the following suggestion: if, in a rolling period of 30 days, a BSP has at least once reached an aFRR delivered which equals their maximum retained capacity for the same product (aFRR up or down) there would be no test.

Example: A BSP has contracted in the last rolling 30 days volumes between 0 and 12MW of aFRR down with ELIA. If, at least during one time step in the last 30 rolling days, the BSP has reached an aFRR Supplied of 12MW down, the BSP has already demonstrated their ability to provide the capacity. There is no more reason to request a test activation hence the test is skipped.

Calculation methodology of the penalty: aFRR missing MW & effect of outliers

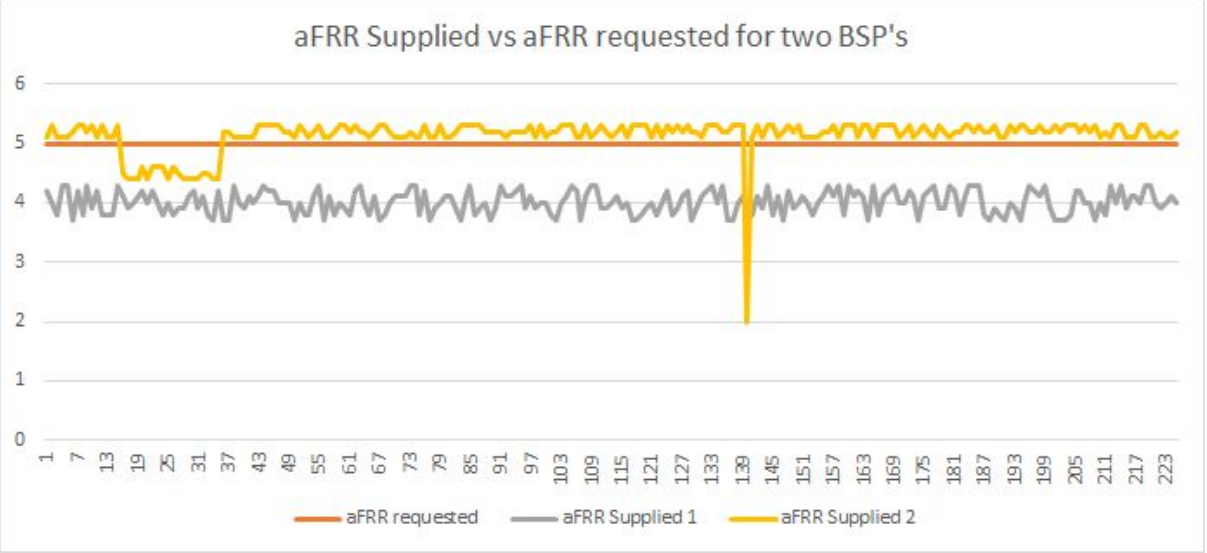
In the currently proposed penalty scheme a penalty would be due if, during at least 15 time steps, the aFRR supplied is lower than the aFRR requested (in the case of aFRR UP).

The aFRR supplied is defined as the difference between the aFRR baseline and the measured power. Multiple reasons exist why the aFRR supplied would be lower than the aFRR requested.
There could be **technical issues** where the unit supplying the aFRR is physically not able to deliver the requested amount, typically this would influence many time steps .There could also be **non-technical issues** as

for example, the effect of outliers. Outliers are typically very limited in duration and might arise during only one time step due to, for example measurement errors or temporary baseline issues. As demonstrated in the next paragraph this can lead to disproportionate penalties.

The "aFRR Missing MW" is a crucial parameter in the determination of penalty for the aFRR missing MW. It is defined as the **highest** deviation between requested and supplied aFRR. In the next graph we show a full availability test (with the 225 timesteps of QH2 of the test) for two BSP's who both had to supply 5MW of aFRR

- BSP 1 has consistently supplied around 4MW, strongly suggesting that this BSP is technically not capable to deliver the volume they sold to ELIA. the aFRR missing MW is 1.3MW
- BSP 2 has 20 timesteps in which the aFRR requested was not reached. One of those 20 timesteps is an outlier in which the delivered aFRR decreased to 2 MW. the aFRR missing is therefore 2MW



When the selection and selection prices of both BSP's is similar BSP 2 will pay 154% the penalty of BSP 1 despite they are clearly delivering a better quality service as BSP 1. The outlier which affected BSP 1 could cost them up to 60% of the revenues of the last 30 days while, if the outlier was ignored, the cost would have been drastically reduced. Outliers can never be avoided and the risk that an outlier would lead to a considerable penalty cannot be ignored with this set-up.

One possibility to resolve this issue would be to take a percentile of the deviation per timestep instead of the highest . For example: if we take the 90st percentile of the deviation (meaning 90% of deviations are smaller) this would give for BSP 1.3MW as aFRR missing MW, exactly the same as before. For BSP 2 the 90st percentile is 0,6MW, effectively ignoring the outlier and leading to a penalty which seems more correct as compared to the performance of BSP 1.

Calculation methodology of the penalty: Relevance of failed Test

The formula to calculate the penalty is, as from the 'missing MW' , exactly equivalent to the mFRR formula.
For the rarely called mFRR it makes sense to, if an Availability Control has failed, to pay back part of the earnings that are linked to these missing MW. The underlying assumption is that, when a random Availability Control has failed, the missing MW's were probably missing for a longer period in the month and not just the moment of the Availability Control. Hence the addition of a factor Alpha that takes a portion of the revenues earned in the period. #CCTU*hours$_{CCTU}$ with average price CP$_{WA}$.

But again for aFRR the situation is different. In contrast to mFRR the Availability test might not have been the only full activation of the capacity. If you have one test with aFRR Missing MW but, in the 29 preceding days, have multiple times successfully reached the same aFRR requested as in the failed Availability test it is

statistically not straightforward to just assume that the aFRR Missing was also missing for a large part of that period. This means that the aFRR Missing MW is NOT representative for the availability of the capacity during the month. In this particular case the Missing MW can be better added to the activation control penalties instead.

3) Implementation Complexity and ELIA support

Flexcity would like to emphasise that, in order to be ready before July 2020, it is crucial that ELIA provides as much support as possible. As a positive example we would like to refer to the technical specifications which have been shared by ELIA. We would also like to ask to foresee as soon as possible different demo platforms and tools to test the communication requirements.

Kind regards,

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