NRA public consultation on Flow Based Market Coupling

Synthesis of respondents' answers

This document contains a question by question summary of the answers provided to the Central West Europe (CWE) National Regulatory Authorities (NRA) public consultation on Flow Based Market Coupling (FBMC) organised from 2 June 2014 to 30 June 2014. There were 16 respondents who provided an answer to this consultation.

CWE NRAs wish to thank the market participants that responded to this consultation and took the comments on board in their interactions with the CWE FBMC Project Group.

1 What kind of improvements do the FB(I)[1] principles and implementation bring for the whole market and for you as a market participant?

Summary

Most respondents state that Flow Based market coupling (FB) optimizes the allocation of cross-border capacity, which entails higher social welfare and higher price convergence. Better cooperation between TSOs is also mentioned, since FB forces TSOs and Exchanges to work together. According to most respondents FB will also lead to better transparency regarding critical branches and shadow prices and, based on this, to better decisions about investments in new infrastructure. Security of supply could also benefit, since FB is closer to the physical reality of the grid. This means the risk for possible overloading of network elements is reduced.

However, there are also a significant number of respondents that state that the potential benefits of flow based can only be obtained if market players have good knowledge of the FB calculation model and are able to predict prices. At the moment they consider that the current level of transparency does not completely allow this to be the case.

Nevertheless, two respondents stated that they would like to have the current version of FB implemented as soon as possible.

Detailed positions

Regarding the improvements for the individual market participants the following has been mentioned. One respondent links FB to renewable energy sources stating the changes from the RES integration and the German nuclear phase-out are forcing the power systems in Europe to better use existing resources. One respondent states that if FB coupling is fully implemented, the impacts on the day-ahead price characteristics will propagate on forward prices with significant repercussions on their balance sheet.

Ten respondents answer that Flow Based Market coupling will optimize the allocation of cross-border capacity. This will mean that, within technical limits, more capacity is allocated to the market.

[1] When writing FB(I), we refer to the Flow-Based methodology principles, thus to both Flow-Based Plain and Flow-Based Intuitive.

Nine respondents answer that FB can increase welfare.

Moreover, five respondents answer that FB leads to further integration of TSO cooperation and CWE power markets in general while four respondents answer that FB leads to better price convergence.

Three respondents answer that better transparency regarding critical branches and shadow prices leads to better decisions about investments in new infrastructure.

Two respondents answer that FB is nearer to the physical reality of the grid, which is beneficial for security of supply reasons.

Six respondents answer that the potential benefits of flow based can only be achieved if market players have good knowledge of the FB calculation model and are able to predict prices.

2 Are there improvements in other areas than transparency you would like to suggest the project partners to implement before Go-Live?

Summary

Several market players ask for further improvements before go-live in terms of robustness of the methodology but also on one or several more specific aspects of the methodology (FB parameters, fallback). They also ask for the core methodology not to change anymore before go-live, at least without a more thorough information/consultation of market players.
Nevertheless, four market players have identified no need for further improvements before Go-live.

Detailed positions

Seven respondents ask for a better robustness before Go-live. They assess current robustness still not to be sufficient in terms of missing days, and five of them call for an internal process of validation to be further developed by the project, While understanding these missing days can be linked to the fact TSOs have to handle the Flow Based simulation in parallel to the NTC process, one player asks for the proof to be made that missing days only happen because of this double process.
Several market players call for a higher degree of stability in the methodology which is applied by TSOs. This can go in their mind through:

- a dialogue with market players before changing the methodology in the form of a stakeholder committee,
- the information towards the market of every change in terms of methodology,
- and a parallel run before implementing every new change.

Three market players do consider there is still room to improve the Flow Based parameters (D2CF, GSK, FAV). Moreover, some respondents call for a quicker development than foreseen of the integration of APG grid constraints into the calculation or for a better coordination with CEE and Switzerland.
Some market players do also insist on the fact it would be necessary to assess that market results are affordable for the grid, without inducing an increase of redispatching and without impacting third party TSOs.

Concerning the Fallback, the “n” parameter added to the Long-Term Allocation is considered by three market players not to be a sufficient commitment of TSOs. Moreover, some market players call for further estimation of the impact of the fallback on the welfare, and of the number of hours it could be activated. One of them asks for the fallback to be simulated (for real) in the parallel run.

Two market players consider it would be needed to test ATC shadow auction as far as they could be more probably used, and could concern all borders at the same time (different from today).

Two players express the importance of knowing as soon as possible the date of the Go-live because knowing if FB will begin in due time has an impact on their way to bid for the yearly auction.

3 Are there improvements in other areas than transparency you would like to suggest the project partners to implement for a future flow-based 2.0?

Summary

Six respondents state that the improvements for version 2.0 of FB(I) should be already implemented in the 1.0 version. They respond that these improvements are needed for a robustly working system. However, three parties indicate that the FB(I) system should be implemented as soon as possible while four parties have no comments.

Detailed positions

One respondent thinks that the (costly) remedial actions should be better explained.

Three respondents state that other timeframes in welfare optimization i.e. intraday/forward can be scrutinezed for the next version.

One respondent makes a link with the zone issue. According to this respondent, France and Germany are too big as a zone and should be split up to get better FB(I) results.

4 Do you have any preferences for the Flow-Based plain or Flow-Based intuitive market coupling? For additional information we refer to annex 13 of the Approval Package.

- **FB-plain**
- **FB Intuitive**
- **no preferences**

Please state why.

Summary

Nine respondents have expressed preference for Flow Based Intuitive (FBI). In addition to these nine respondents, six others have expressed no preference between the two versions of FB. Nevertheless, among these six respondents, two do indeed provide argument in favour of FBI.
One respondent supports FB Plain because it maximizes welfare.

Detailed positions

Players who directly or indirectly support FBI

Several respondents favour FBI because the difference in terms of welfare or prices is limited, and because it is likely to have an easier public acceptance easing the quick implementation of Flow Based which is key. Moreover, one respondent sees a possible risk of arbitrage in Intraday that could destroy extra-value created by non-intuitive cases in day-ahead.
One respondent also points out that imposing intuitiveness may avoid to adapt analytics models and ease price prediction.

Another one points out that there could be a different impact on forward transmission rights between FB and FBI.

Two respondents nevertheless underline FBI may have an impact on the algorithm, in terms of time to converge and in terms of Paradoxical Rejected Blocked orders, which need to be analysed. In addition, they call for a proper calculation in Intraday to have full consistency with FBI in Day-ahead.
Moreover, among the nine respondents who favour FBI, two also express a positive view on FB Plain:

- One points out that FB plain could become their preferred solution if big zones were to be split up, what would in their opinion have as effect to induce a bigger difference between FBI and FB Plain.
- Another one states that, apart from acceptance reason, they would in principle support FB Plain.

Players who have expressed no preference

Concerning the four respondents who have expressed no preference (without providing arguments in favour of FBI), they provide:

- elements that explain why they have not been able to choose: one of them underlines the set of data not to be consistent enough to choose and feels there could be a link between counter intuitive flows and hours of welfare loss in FB compared to ATC while another explains that difference in terms of welfare is tiny;
- elements in favour of both versions of FB:
    - Elements in favour of FBI: for one of these respondents, counter intuitive flows may lead to negative effects for small bidding zones,
    - Elements in favour of FB Plain: One respondent considers that the most important is the capability of Market players to predict prices, which could be more difficult in FBI as far as some features of the patch would be unclear/unforeseeable. The same player considers price spikes may create a bigger welfare difference in favour of FB Plain. Another explains there are counter intuitive flows on DC cables in the frame of NWE.

5 Do you understand the capacity calculation model presented?

- **informal level**
- **intermediate, I understand the explanation of most technical parameters**
- **high, I understand the explanation of all technical parameters very well**

If applicable, which additional information to the capacity calculation model and/or the explanation of all technical parameters do you need?

Summary

Ten respondents stated they have an intermediate level of understanding of the capacity calculation model. Furthermore four respondents described their level of understanding as high and two respondents responded that they understand the model on an informal level.

Detailed positions

Four respondents with informal and intermediate level think the model is complex or hard to understand. Two of them ask for a simulation model together with infographics or animations. Another respondent asks for a more detailed functional description to build an own PTDF matrix "toy" model. Finally, one respondent requests both detailed and simple examples and in addition stakeholder workshops.
Besides that, one respondent would like to have access to the mathematical description of the Euphemia algorithm with the FB adaptations and a single source of all relevant information providing the FB calculation model, a description of the auction mechanism and the procedure for cross-border-reserve energy allocation.

Two respondents with an intermediate level of understanding gave a list of useful information which is, in their view, not fully provided yet:

- the Common Grid Model
- the GSK methodology
- the FRMs
- the list of Critical Branches
- the base case assumptions
- the standard processes for the application of remedial actions
- a list with each remedial action linked to a specific event in order to have a view on the potential change on the Flow Based domain
- all data of the PTDF matrices as early as possible
- parallel publication of ATC values after go-live for at least 3 months
- TSOs total (forecast) import and export constraints ex-ante
- any special parameters or events that influence the (historical) PTDFs

A respondent with a high level of understanding asks why the LTA inclusion check becomes so important under Flow-Based, whereas under ATC the domain offered to the day-ahead exchanges would be always larger than the LTAs in all directions.

Another respondent with a high level of understanding states that the FB model and optimization process are fully transparent and undoubtedly understandable. The respondent asks for an entire common grid model with components provided by the TSOs (e.g. D2CF and GSK process as well as remedial actions). Furthermore it requests all information that is not classified “confidential” on a legal basis to be published whenever technically possible and the transmission costs are reasonable.

Finally, four respondents did not ask for additional information.

6 Do you understand the spot and forward price formation under FB(I) MC?

- ***informal level***
- ***intermediate***
- ***high/expert***

If applicable, which additional information related to price formation under FB(I) MC you wish to be published?

Summary

Twelve respondents stated they have an intermediate level of understanding of the spot and forward price formation under FB(I) MC.
Two respondents described their level of understanding as high. Another two respondents answered that they understand the price formation on an informal level.

Detailed positions

Two respondents state that spot prices under FB(I) MC remain very opaque and it is unclear for them how exactly the FBI (Intuitive patch) process works in the EUPHEMIA algorithm. Because the results of the parallel run are difficult to predict and may still include errors, it could result in additional risk premiums being taken by market participants in the various timeframes as long as the full trust in the methodology is not established. NTC/ATC methods should be the only ones used in the forward timeframe. Their articulation with FB parameters should therefore be further explained before go-live.

Another respondent mentions its inability to estimate the effect of changes on the grid and in power plant capacities on flow based parameters which in turn limits the possibility to understand the price formation.
Similarly, a further respondent names the insufficient visibility on how the FB parameters are evolving and on how critical branches may impact the day to day changes in settlement prices. They anticipate that FB(I) will decrease the visibility of future spot prices due to increased volatility and insufficient transparency as it currently stands. They see a possible barrier for market participants and an effect on liquidity caused by the increased complexity.

While one respondent hopes to reach a more profound understanding on the price formation by completing the FBMC e-learning module (provided by two parties of the FBMC Project), another one already understands the spot price formation given the FB parameters. Nonetheless, the forward price formation, which depends on the expected FB parameters and uncertainty, is less clear for this market player.

One respondent asks in general if links between the spot and the forward market will change with the introduction of FB(I).

One respondent with high understanding of the mathematical model and the optimization algorithm explains that this is not in general to be set equal with an understanding of the price formation process. It demands all information to be able to replicate the optimization problem and all constraints. If this condition is not fulfilled, all market parties would have to make decisions in a market framework of increased complexity and uncertainty compared to those under the current ATC model. This would imply limited trading volumes and rising risk premiums. It ends with the warning about a loss of social welfare caused by the two latter points.

To get a better understanding of the spot and forward price formation under FB(I) MC, respondents made following requests:

- Two of them think the NRAs should at least have all the information needed to investigate if there are market participants manipulating the system and enough information to get sufficient visibility on the pricing process and relevant parameters. They worry that a trader with a lot of methodological assets can eventually crack the code and manipulate the market. It would then be better to give everyone all the information or no information at all.

- Another respondent wants the informational equivalent to the ATCs, i.e. an indicator for trader´s to make a well-informed trading decision. In their opinion the PTDF matrix is far too complex to provide such a message and shadow ATCs lack the necessary precision.
- One respondent asks for spanning methods, quality indicators, fallback FB(I) parameters, information about changes in the methodology or software and any price significant evolutions.
- Jointly with another player, it would like to see a clarification of the “intuitive” patch (FBI).
- In parallel to the longer term provisional NTCs being published, from the perspective of one respondent the publication of longer term provisional PTDFs and RAMs would help market participants establish their view on future prices
- Furthermore, information on prices and flows to the non-CWE zones is requested as well as the publication of block bids in Belgian and the Netherlands.

7 Do you consider you will be in a position to bid properly in the Flow-Based environment from the Go-Live date now expected at the end of 2014?

Please explain and make a link with the studies or tools you may have developed to be prepared for Go-Live.

Summary

Among the eight respondents who provide a clear answer to this question (one has not answered at all, and other have not provided either a clear "yes" or "no"), three players answered they will be in a position to bid properly in the Flow Based environment (one mentioning it can bid "simple" assets), while four stated they are not ready at the moment.
The majority of the respondents referred to issues or topics that may still need to be improved so that they are well prepared for Flow Based, either in terms of transparency or understanding Flow Based.

Detailed answers

Most of the respondents use analysis of the parallel run data. Four of them have not been able yet to build a forecast model, while three stated they are able to bid in Flow Based environment.
Moreover, several respondents explain they are working on ways to forecast the price formation of spot and forward markets. Concrete studies or tools were nevertheless not mentioned. One respondent stated that despite performing a thorough analysis of the parallel-run data, he is still unable to build a proper forecast model.

Reference to "time component" – i.e. time needed for setting up simulation, integration into the own models, learning or fine-tuning – is something the majority of the responders have in common. One respondent stated that at least six months will be needed to set up FB(I) and/or regression model simulation after the required information is available.

In addition, two respondents express the view that market participants might turn to safer solutions on OTC market.

Moreover, respondents explained that in order to be well prepared there are needs:
- regarding the analysis possibilities and thus make a link to their request in terms of transparency, data set and robustness of the methodology;
- to better understand the effects of FB in terms of cross border capacities (one respondent) and comparison to ATC (another one), short-term trading (one respondent)

8 Is the current proposal for data publication sufficient for your daily Flow-Based operation?

Summary

On this question, 13 respondents answered that the current proposal for data publication is not sufficient in their mind. One respondent answered the proposed data publication is sufficient and 2 did not answer.
The majority of respondents do not consider the already reworked proposal for data publication to fit their needs for their daily Flow-Based operation. Nonetheless, the fixed anonymized publication was considered as a significant progress in addition to the most important information delivered in the utility tool.
Some respondents want more data on other time horizons (week, month, year)
In general respondents want more data, already during parallel runs, in order to prepare themselves for launch. Respondents often link transparency with the need for better price forecasting under FBMC.

Detailed positions

Market players have expressed different reasons for not finding data publication sufficient:

- It is explained by one market player that without adequate price discovery in week ahead market, the security of supply could be more at risk. One respondent indicates it wants information on power plants out of preservation on time
- Two respondents want to get deeper insight on parameters influencing the FBMC calculation. They express the need to better understand the assumptions taken in the calculation.
- Most of the transparency requirements need to be implemented before and well ahead of Go-Live. (one respondent)
- Changing the system is an issue: two respondents expect at least one year of parallel run of a system which*:*
    - is not adjusted over time,
    - delivers results for the entire period and
    - is completely transparent on input paramters.
- Missing days is an issue in order to be able to make a good forecast (one respondent)
- Fallback is judged not to be transparent enough by one respondent
- ATC disappearing as reference after go-live is an issue (one respondent). One respondent states that it expects the same level of data publication as in ATC.
- Not clear yet whether promised data will be sufficient (one respondent)
- Three respondents disagree with §10.5.2 of the consultation document, where publishing the common grid model is identified as a risk of market abuse and a problem related to the security of critical infrastructure. They, on the contrary, expect less opportunities of abuse if this information is publicly available, because peer pressure will find to apply.

Additional publication asked:

- Transparency on maintenance of 'critical branches' (one respondent)
- A complete collection of FB parameters for several scenarios/reference days (two respondents) in order to form a view on future scenarios / market conditions not covered by the parallel run
- Two respondents ask for a "Reference FB domain" (even if it is not precise)
- For day ahead market basic assumption of the D2CF data set would be needed (three respondents) and ideally published D-1 14:00 (one respondent):
    - Consumption
    - RES production forecast
    - Conventional Production forecast broken down by zone and (at least) fuel type
    - cross border flows on non-coupled borders and within the market coupling region
    - Reference day used for reference program calculation
- For the forward market: Need to have basic cases and corresponding assumptions to create scenarios (one respondent)

- fixed anonymized labels of critical branches also in the publication at D-1 8:00 and 10:30 (one respondent) and not only ex-post.
- The “redundant” (i.e. non-constraining) parameters should be published in addition to the constraining parameters (one respondent).
- Shadow Auction ATCs are not available on ftp-server. It is essential for market participants to download data automatically. (one respondent)
- Market participants need all data that will be published after go-live in the same format as it will be published after go-live (one respondent). One respondent states it expects the same level of publication as after go-live to be implemented as soon as possible.
- One respondent asks for good visualization of the FBMC results.

9 If applicable, are there additionnal studies / indicators you would like to be processed during FB(I) implementation on the market side either before or after Go-Live? Please explain why.

Summary

Seven respondents made requests in terms of further studies to be published while nine see no further study to be published. The demands concern several topics which are listed below, more of the studies being in their view necessary before go-live.

Detailed proposals

Study needed before Go-live:

- Impact assessment on forward trading and intraday capacity calculation is required by three respondents
- Intuitive patch: to fully agree with intuitive *Flow Based*, two respondents would need to be demonstrated that the intuitive patch does not induce any extra time (endangering NWE timings) and that it does not have any impact in terms of Paradoxically Rejected Blocks Sensitivity analysis on the FRM and also on the PTDF threshold of 5% for a line to be considered as a critical branch
- Report on ability to detect errors (one respondent)
- Market report at wider level, with parallel run prices for these markets (NWE) (one respondent)
- Study on the compatibility with the Flow Based methodology developed in CEE (one respondent)
- Have data to compare foreseen and actual flows on the grid (one respondent)
- Simulate impact of generation / grid changes on Flow Based parameters to estimate forward prices (one respondent)
- Decompose welfare into what is intrinsic of FB or of coordination (one respondent)
- Be clearer in explaining why ID ATC are smaller than current ones (one respondent)

Study that would be useful after Go-live:

- Analysis on the quality of order books (one respondent), or the computation of the bid/ask curve FB/ATC (one respondent)
- Update monitoring studies already provided (two respondents)
- Impact of the RAM (more widely of TSOs decision) on Flow Based results (one respondent)
- Simulation of market results under FB if Germany and/or France were to be split (one respondent)
- Impact of RES on NEX FB/ATC (one respondent)

10 In terms of parallel run performance and the outcome of the Member Testing, what do you consider as criteria for the Go Live? Please consider performance of the regular FBMC as well as the FBMC under fallback conditions (see section 4.6 of the Approval Package*).*

Summary

Numerous respondents indicate the need for longer duration of parallel runs:

- 3 months of successful runs, no missing days, (no fallback) (two respondents)
- 6 months of successful runs, no missing days (two respondents)
- 1 year of successful runs, no missing days (one respondent)
- 2 years without changes (one respondent)
- 3 full years of data (one respondent)
- complete experimentation including a full winter (one respondent)

Other time-related constraints to go-live were also emitted:

- announcement of the definite go-live date at least 3 months in advance (three respondents)
- 6 months minimum prepare for the exact set of published data and integrate this (one respondent)

Robustness of the FMBC system is seen as a critical issue by several respondents. Respondents expect:

- regular FBMC 99,75% of the time (one respondent)
- 100 % stability - No ex-post corrections (two respondents) A very high level of system integrity and stability (three respondents)
- Fallback mechanism with:
    - adequate quality and control plans (one respondent)
    - transparency on fallback (one respondent)

Two respondents did not answer this question.

Detailed positions

Many responses on go-live criteria are linked to stability, robustness and transparency issues. Transparency needs to be solved before go-live.

- One respondent states FB-data need to be published consistently in a reliable and timely manner. The solution has to be stable and there is a consistent approach by the TSOs towards the FB-calculations.
- One respondent agrees with go live criteria of project group. On top of that all questions should be answered on the casc forum (three respondents).
- One respondent thinks parallel run should publish data same as after go live. Thus 08:00 PTDF matrix, block bids, non CWE flows.
- During testing there should be no unexplainable results. In any way no results that cannot be explained by a simple investigation. (two respondents)
- Two respondents believe that if no FB market coupling is possible, the fall-back should be ATC.
- At least one year of reliable dataset, with explanations on methodology changes and non-anonymised critical branches is needed according to one respondent.
- One respondent ask for stability of constraints and methodology.
- Two respondents want the relaunch of the FB user group expert meetings to finalise discussions on the remaining open transparency questions. According to certain respondents there remains an open list of topics to be discussed.
- Two respondents want daily parallel runs with shadow ATC values.
- Two respondents want the publication of essential parts of NRA monitoring reports (FAV, etc.) before Go-Live.
- One respondent asks for the harmonization of the cross-border intraday Gate Closure Time and allocation rules in the CWE region to improve intraday for when FBMC fails

11 What type of technical event or market results, linked to FB(I) MC implementation, should potentially trigger a rollback to the ATC market coupling? Please be as specific as possible. Please note that the Rollback triggering will be a JSC decision

Summary

Respondents believe several reasons exist to trigger a rollback. If the following situations were to occur this would, in the respondents' view, trigger a rollback to ATC market coupling:

- unstable results/ many errors / missing days (seven respondents) suspicious power flows/ price signals (one respondent)
- suspicious CB restricting FB domain (one respondent)
- Unexplained variation in market results for similar input (one respondent)
- Strong loss of liquidity on day ahead and forward trading due to Flow-based uncertainty and lack of confidence (four respondents)
- lower welfare than ATC

According to one respondent, the rollback period should last one year.
One respondent considers a rollback to be used only when really needed.
Five respondents did not answer this question.

Detailed positions

According to the respondents rollback should be triggered if the following events were to occur:

- This would have to be based on an assessment of the actual situation as events might vary (one respondent)
- Significant difference between the results of the simulation and the actual results are observed. (one respondent)
- There are strong influences and restrictions on intraday cross border trading due to flow-based cross border allocation (two respondents)
- the risk to continue with the FB(I) MC is estimated too high or when a suspension would be needed to improve the methodology / implementation of FB(I) MC (two respondents)
- "unstable results" are observed what means (one respondent):
    - if flow based parameters cannot be calculated one day in the first 3 months, or fallback is triggered more than once a month
    - If external constraints are binding in a significant percentage of hours
    - If results are either leading to unsafe operation or to too safe (and more commercially constrained) operation

One respondent has been preparing its portfolio for Flow Based already a few months, and will continue to do so. Shifting back means facing an unprepared risk in our portfolio. Therefore they indicate not use rollback lightly (one respondent).
Keep ATC after Flow Based go-live for at least 3 months: compare both models and ensure maximisation of welfare (two respondents).

12 Do you have any other or more general comments concerning flow based market coupling?

Seven respondents did not have any comments.

Strong support to the FB project and belief that it should be implemented as soon as possible is clearly stated by three respondents; however, two of them and the majority of other respondents highlighted that ensuring a reliable and transparent FB methodology is essential for stable FB implementation, for general market confidence and achievement of expected benefits of the FB methodology. Beside, many respondents highlighted transparency, data publication (with regard to long term planning and by reference to Regulation (EC) 543/2013 on submission and publication of data in electricity markets) as essential for understanding of FB methodology, forecast of spot prices, precondition for market confidence and for success of FB.

Some respondents have the impression that impact analysis to Intraday Market and economic impact of FBMC to long-term markets has not been performed in detail.

- a recalculation (instead of a shift) of the FB domain after DA clearing would enable maximization of the allocation of the intraday cross-border capacities (two respondents)
- FB(I) fall-back mode has to be tested by market participants (two respondents).
- the expected welfare gained in the day-ahead market might be contradictory to the effect FBMC may have on the long-term market.

One respondent wishes FB concept and methodology to be brought near to broader society of stakeholders, because not all stakeholders necessarily want to participate in the market themselves and have as such not followed up the long test periods.

One respondent referred to dispatch of power stations and need to predict spot prices in order to determine preservation time periods/ restart time stamps properly. For this, an understanding of the PTDF matrix and RAM and the evolution of both is needed.