

CONSULTATION REPORT

Report on public consultation on “the improvement of the quality of input data for congestion management”.

23/12/2022



Contents

1.	Introduction	3
2.	Feedback received	3
3.	Instructions for reading this document	3
4.	Comments received during the public consultation	5
4.1	General comments received during the public consultation	5
4.2	Specific comments received during the public consultation	6
5.	Annex	10
5.1	Feedback FEBEG	10

1. Introduction

Elia organized a public consultation from 10th of June 2022 to 15th of July 2022 regarding *the improvement of the quality of input data for congestion management*.

The purpose of this report is to consolidate the feedback received from the public consultation, while at the same time reflecting Elia's position on these reactions.

2. Feedback received

In response to the public consultation, Elia received a non-confidential reply from FEBEG (in annex of this report). This reaction, together with this consultation report, will be made available on Elia's website.

3. Instructions for reading this document

This consultation report is structured as follows:

- Section 1 contains the introductory context,
- Section 2 gives a brief overview of the responses received,
- Section 3 contains instructions for reading this document,
- Section 4 discusses the various comments received during the public consultation and Elia's position on them,
- Section 5 contains the annex of the consultation report.

This consultation report is not a 'stand-alone' document, but should be read together with the proposal submitted for consultation, the reactions received from the market participants (annexed to this document) and final proposal¹.

Section 4 of the document is structured as follows with additional information on the content per column below.

¹ Final document will be published here: <https://www.elia.be/en/grid-data/congestion-management?csrt=6734941063536309030>

Subject/Article/Title	Stakeholder	Comment	Justification
A	B	C	D

- A. Subject matter covered by the various responses received.
- B. It is indicated who made the comment. In general, the comments are listed alphabetically in the name of the parties concerned.
- C. This document contains an overview of the main, but also specific comments on the document submitted for consultation.
 - o In doing so, an attempt was made to list/consolidate all comments received and to argue whether or not they should be taken into account.
 - o In order to maintain authenticity, the comments have been copied as much as possible in this document. However, the comments have sometimes been shortened and term have been uniformed to make them easier to read.
 - o For clarification purposes, it is recommended to always include the original comment of the stakeholder concerned, as included in the appendix to this report.
- D. This column contains Elia’s arguments as to why a comment was or was not included in the final proposal. However, this column does not contain the final text. For this purpose, the final proposal must be consulted.

4. Comments received during the public consultation

4.1 General comments received during the public consultation

This section provides an overview of the general reactions and concerns of market players that Elia received to the document submitted for consultation.

SUBJECT	STAKEHOLDER	FEEDBACK RECEIVED	ELIA'S VIEW
<i>General</i>	<i>FEBEG</i>	FEBEG reminded Elia that the costs associated to congestions are bore by market participants whose assets are located in frequently congested electrical zone. Therefore, FEBEG recommends that the improvement points with business value - proposed by Elia or suggested in this note – are part of a plan that is implemented with high priority.	<i>Elia's implementation roadmap is ambitious and has already started with all possible identified elements. Some improvements require completion of other enablers though. Elia will make sure those enablers will be realized with high priority.</i>

4.2 Specific comments received during the public consultation

SUBJECT	STAKE-HOLDER	FEEDBACK RECEIVED	ELIA'S VIEW
<i>Offshore wind</i>	<i>FEBEG</i>	FEBEG is deeply concerned with the structural bias in the offshore wind forecast. DA forecast from 6 pm (which is typically the moment where Elia define red zones) is structurally overestimating what the offshore generation will be. Besides the danger to have a grid that will be short in real-time, one can think that Elia could overestimate the impact of congestions when defining the RZ/ CRI. FEBEG urges Elia to apply as soon as possible a top-down correction on this kind of structural bias	<i>Elia is currently working on IT developments to allow the use of different forecast providers depending on weather conditions. This would allow Elia to keep the current provider (IRM/KMI) during storm events for which this provider is well-performing while using another provider (VITEC²) the rest of the time. This will solve the bias, while keeping a good storm forecast. Implementation is foreseen early 2023.</i>
<i>Offshore wind</i>	<i>FEBEG</i>	Historical mFRR activations have been filtered out of the dataset, this is a good thing. FEBEG invites Elia to make sure that aFRR will also be filtered in the future.	<i>The alternative forecast provider, VITEC, is automatically discarding all such events (mFRR, aFRR and even downward regulation on request of the BRP itself) from its learning periods for the machine-learning algorithms.</i>
<i>Offshore wind</i>	<i>FEBEG</i>	Benchmark of offshore forecasts with surrounding countries suggests that Elia (and its weather suppliers) is performing relatively low. It would indeed be interesting to discuss with other TSO's and analyze the input of their weather providers.	<i>Elia knows that TSOs usually buy those services from providers as Elia does. VITEC was selected a couple of years ago for on-shore forecast provision after a trial phase of 3 months with 3 other competitors. Elia will now also switch to VITEC for the offshore wind forecast (except during storm events), which should solve the bias.</i>

² [Aiolos forecast studio \(vitec-energy.com\)](https://www.vitec-energy.com)

<p><i>Other decentralized</i></p>	<p><i>FEPEG</i></p>	<p>FEPEG also believes that there would be an added value to improve the granularity and typology of the reference days. It seems straightforward that realized data would be highly different whether we are in weekdays, week-ends, public holidays, etc. Improving the reference days by better representing the calendar would make a lot of sense</p>	<p><i>Elia already takes into account 3 types of days. Weekdays, Saturdays and Sundays. A Sunday is forecasted by doing a weighted average of the 3 last Sundays etc. Elia foresees the addition of bridge days (= Saturdays), bank holidays (= Sundays) and weekdays during Christmas holidays (new category) by early 2023. Studies showed that adding more types of days would decrease the quality. For example, defining 1st of January as a separate category would mean that the forecast is equal to the weighted average of the last 3 “1st of January” which is not the best approach considering that 1st of January 2 or 3 years ago might be very different from the next 1st of January. It seems better to simply define the 1st of January as a Sunday. At any case this rule will be massively improved as soon as the individual forecasts will be set up. The most impacting units will then benefit from a tailor-made machine learning forecast.</i></p>
<p><i>Load</i></p>	<p><i>FEPEG</i></p>	<p>FEPEG does not think that sending schedules is a large effort for industrial companies. They usually work with supply contracts allowing them to build their profiles by purchasing power on different maturities (from forward to intraday market) and ultimately exposing them to imbalance tariffs. [...] The difficulty will rather lie in the communication protocol between the grid users, the scheduling agent and Elia. iCAROS phase 1 should luckily help in the first steps of this implementation.</p>	<p><i>iCAROS phase 1 will indeed implement new communication protocol between Elia and the scheduling agent but the data exchange is not the only aspect that needs to be assessed when implementing a new design. Also the fact that these are new service providers and that there are regulatory and contractual consequences, need to be considered. As such scheduling process for demand facilities will be in the scope of iCAROS phase 2.</i></p>
<p><i>Load</i></p>	<p><i>FEPEG</i></p>	<p>The repartition key from total load to individual load should be reviewed more frequently. As pointed out, 10 GW on new year day and 10 GW on a weekday will most probably be allocated differently. Let’s remember that industries run at limited capacity during week-ends and holidays. In this context, is it still relevant to work with a fixed repartition key? An autoregressive model has its limits in some situations and if relying on past data, several updates per year are required. Furthermore, we experience recently an unfortunate increase in gas and power prices. This might push some industries to be in economical slow-down</p>	<p><i>The repartition keys are updated once a year. Elia uses quarter-hourly data from the last year to generate all the repartition keys. But Elia applies a different key depending on the type of day, the moment of the day capturing the cyclical of the load pattern. For example, Elia uses Summer weekend consumption</i></p>

		(or even shut-down). A static repartition key defined once a year would not capture this kind of effect. A dynamic (self-learning) repartition key would. Finally, we believe that the comment about the typology of reference days (shared above in 'other decentralized) is also applicable for load. Penetration of EV's, electrical pumps, etc. are not part of historical datasets and their profile is certainly different in weekdays, week-ends and holidays.	<i>data from the past year to generate the repartition key for predicting the load profiles of the Summer weekends of the ongoing year. At any rate, Elia will evolve in the coming years towards individual forecasting models using the latest metering data as predicting parameter.</i>
<i>Conventional units</i>	<i>FEPEG</i>	FEPEG has been in favor of the relaxation of DA balancing obligation as long as no detrimental effects are identified for the grid security and the maximization of the social welfare. This includes of course the impact on congestion. Therefore, we can only repeat that Elia should duly monitor the impact of such relaxation. Specifically, following situation needs to be analyzed: a large market participant would be exposed to near RT market (with BRP position not balanced and inaccurate schedules) leading to negative impacts on the assessment of congestions.	<i>Elia is closely monitoring the effects of the relaxation of the DA balancing obligation and will continue to do it in the future.</i>
<i>iCAROS</i>	<i>FEPEG</i>	As explained on the specific part dedicated to load forecast, FEPEG is surprised about the decision not to include large industrial customers in iCAROS phase 1 while this study highlights the difficulty to forecast the load of industrial customers via machine learning models. It seems that receiving schedules would help a lot and unfortunately, this would not come before phase 2. This is at the expense of market participants suffering from congestions. Also, the design of iCAROS phase 1 invites scheduling agents to share schedules as of D+7 (Gate opening Time). We can ask ourselves in which extent Elia can make good use of this information before its process D2CF. If not, we do not see why scheduling agents would send information between D+7 and D+2 as it is not used by Elia. Scheduling agents are currently sharing every day MW schedules on large injection points such as offshore wind parcs. We are wondering in which extent Elia could make use of these schedules and compare them with its own models. There is may be a way to get the best out of these 2 inputs.	<i>Elia foresees, as a short-term solution, to use the existing DA schedules of large industrial loads to improve the quality of load forecast. These data are currently communicated via the BRP Offtake Nominations. The future transfer of responsibilities between BRP and SA for providing information on the expected offtake of individual demand facilities will indeed be part of iCAROS phase 2. Regarding the D+7 Gate opening Time, for schedules, Elia reminds that it is only a possibility for Scheduling Agent to send schedules as from D+7, there is no obligation. The schedules must be communicated to Elia by D+1 15:00 (Gate Closing time).</i>
<i>Other</i>	<i>FEPEG</i>	FEPEG appreciates the structure proposed by Elia in terms of segment. We are asking ourselves why there is no approach based on the geography or electrical zones. To our knowledge, the congestions appear frequently in 3 of them: Lang-erbrugge, Hainaut and Stalle. Why don't we focus on improving the data specifically for these regions?	<i>Elia will- make sure that loads and decentralized production could be filtered by electrical zone in the future. This will certainly be helpful for the congestions management, particularly when congestions occurs between two electrical zones.</i>

<p><i>Other</i></p>	<p><i>FEBEG</i></p>	<p>We also notice that some forecasts are structurally biased such as offshore generation forecast which are overestimated and consequently could make use of too frequent/ not strictly needed congestions. We could think about applying a top-down correction (based on the very last realized data) to get rid of those structural bias in specific electrical zones. If bottom-up approach leads to structural bias, Elia should apply a top-down correction to bring forecasts closer to realized data. For example, wake effect on wind turbines cannot be captured with a bottom-up approach and requires a top-down correction.</p>	<p><i>Elia foresees to deploy massively the machine-learning forecasting models. In the coming years those models will have access to the real-time measurements as predictors. As suggested by FEBEG this will most probably improve the forecasting of the next hours (“nowcasting”).</i></p>
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5. Annex

5.1 Feedback FEBEG

General feedback

FEBEG would like to thank Elia for this interesting study and workshop. This topic is of utmost importance FEBEG members and any step towards a more efficient use of congestions will be highly appreciated.

We want to remind that the costs associated to congestions are bore by market participants whose assets are located in frequently congested electrical zone (e.g. Langerbrugge, Hainaut, Stalle, etc), while one could think these costs could also be socialized/ bore by Elia as the design, development and maintenance of the grid is a prerogative of the TSO.

Therefore, FEBEG recommends that the improvement points with business value - proposed by Elia or suggested in this note – are part of a plan that is implemented with high priority.

Specific feedback

FEBEG appreciates the transparency of Elia on the different elements used in the congestion computation and the provided insights in which of these elements can be further improved. Our feedback below is aligned with the structure of the analysis.

Wind

We acknowledge that making forecasts of offshore generation is one of the main challenges to cope with. Given its geographical concentration, its growing massive installed capacity and its forecasting errors, wind seems to be the biggest priority when it comes to improving the data used for congestions. Several elements caught our attention in the analysis:

- We are deeply concerned about the structural bias in the wind forecast as this is detrimental to an efficient congestion management, indeed this could lead to situations where RZ/ CRI/ congestions is used but not needed, and thus excessively used compared to a reference where such bias would not exist. Picture 1 shows that the DA forecast at 6 pm (which is typically the moment where Elia define red zones) is structurally overestimating what the offshore generation will be. There are multiple impacts. Besides the danger to have a grid that will be short in real-time, one can think that Elia could overestimate the impact of congestions when defining the RZ/CRI. FEBEG urges Elia to apply as soon as possible a top-down correction on this kind of structural bias, and this for the sake of maximizing social welfare. It is of utmost importance that forecasting errors are not structurally in the same direction and as close as possible to the realized data.
- Historical mFRR activations have been filtered out of the dataset, this is a good thing. FEBEG invites Elia to make sure that aFRR will also be filtered in the future.

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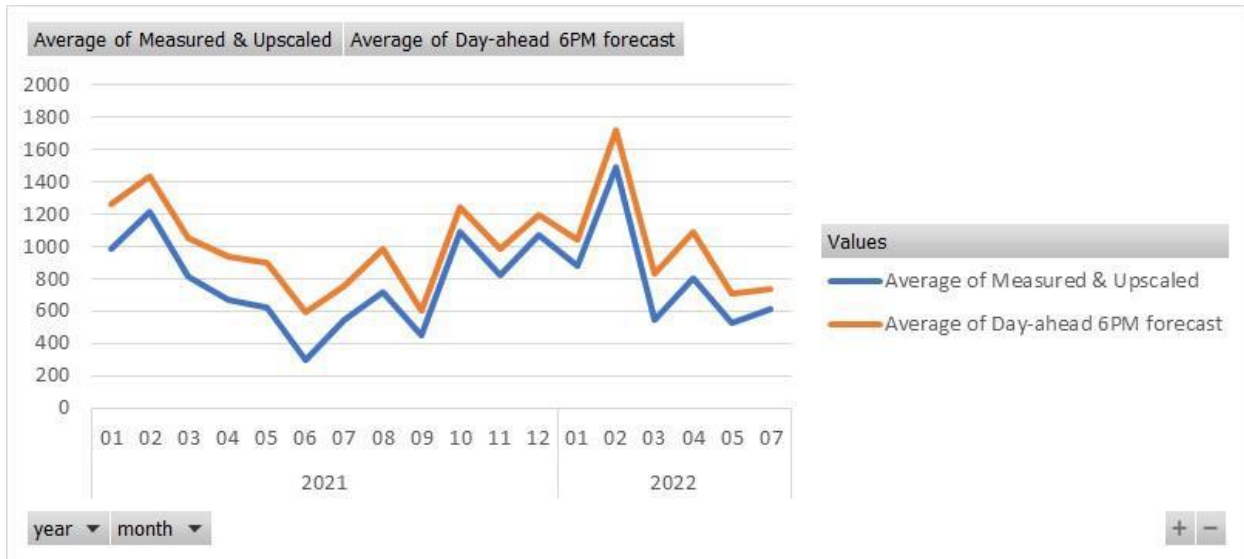
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- Benchmark of offshore forecasts with surrounding countries suggests that Elia (and its weather suppliers) is performing relatively low. It would indeed be interesting to discuss with other TSO's and analyze the input of their weather providers.

The improvements proposed in the analysis are very much welcomed by FEBEG and we believe that the combination of all of them could have a significant impact on the predictions of congestions. We should certainly not evaluate these improvements on an individual basis.

Figure 1: Average monthly offshore generation (DA forecast and realized in MW) – Source: Open Data Platform



PV

No specific feedback on this. The same comment as for offshore would apply if any structural bias in the forecast of PV generation would be identified. This would certainly be valid for large PV parcs. Other PV – given their limited size and they are scattered within the country – are not expected to yield large impacts on the predictions of congestions.

Other decentralized

FEBEG agrees with Elia that the penetration of new technologies (e.g. CHP's, batteries, etc.) needs to be monitored and that past datasets need to be used with caution. Given their geographical distribution, it might not appear on top of the priority list.

FEBEG also believes that there would be an added value to improve the granularity and typology of the reference days. It seems straightforward that realized data would be highly different whether we are in weekdays, week-ends, public holidays, etc. For instance, if you forecast a Saturday, it makes more sense to rely on previous Saturdays (and previous Sundays to a lower extent) than relying on the last 3 reference days rule. This applies for other non-conventional days such as bridge days, Easter, Assumption, Pinkster, 'Hemelvaart', etc. Improving the reference days by better representing the calendar would make a lot of sense.

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Load

The analysis points out that large industrial customers are difficult to predict – due to their deterministic nature - and they have quite an impact on the costs linked to congestions.

In opposition to what is written in the note, FEBEG does not think that sending schedules is a large effort for industrial companies. They usually work with supply contracts allowing them to build their profiles by purchasing power on different maturities (from forward to intraday market) and ultimately exposing them to imbalance tariffs. By opting for such supply contracts, one can deduct that they do have a view on their electrical consumption. If they wouldn't, they would rather opt for fixed price supply contract where suppliers onboard the balancing risks. The difficulty will rather lie in the communication protocol between the grid users, the scheduling agent and Elia. iCAROS phase 1 should luckily help in the first steps of this implementation.

The repartition key from total load to individual load should be reviewed more frequently. As pointed out, 10 GW on new year day and 10 GW on a weekday will most probably be allocated differently. Let's remember that industries run at limited capacity during week-ends and holidays. In this context, is it still relevant to work with a fixed repartition key? An autoregressive model has its limits in some situations and if relying on past data, several updates per year are required.

Furthermore, we experience recently an unfortunate increase in gas and power prices. This might push some industries to be in economical slow-down (or even shut-down). A static repartition key defined once a year would not capture this kind of effect. A dynamic (self-learning) repartition key would.

Finally, we believe that the comment about the typology of reference days (shared above in 'other decentralized') is also applicable for load. Penetration of EV's, electrical pumps, etc. are not part of historical datasets and their profile is certainly different in weekdays, week-ends and holidays.

Conventional units

FEBEG has been in favor of the relaxation of DA balancing obligation as long as no detrimental effects are identified for the grid security and the maximization of the social welfare. This includes of course the impact on congestion. Therefore, we can only repeat that Elia should duly monitor the impact of such relaxation. Specifically, following situation needs to be analyzed: a large market participant would be exposed to near RT market (with BRP position not balanced and inaccurate schedules) leading to negative impacts on the assessment of congestions.

iCAROS

As explained on the specific part dedicated to load forecast, FEBEG is surprised about the decision not to include large industrial customers in iCAROS phase 1 while this study highlights the difficulty to forecast the load of industrial customers via machine learning models. It seems that receiving schedules would help a lot and unfortunately, this would not come before phase 2. This is at the expense of market participants suffering from congestions.

Also, the design of iCAROS phase 1 invites scheduling agents to share schedules as of D+7 (Gate opening Time). We can ask ourselves in which extent Elia can make good use of this information before its process D2CF. If not, we do not see why scheduling agents would send information between D+7 and D+2 as it is not used by Elia.

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Scheduling agents are currently sharing every day MW schedules on large injection points such as offshore wind parks. We are wondering in which extent Elia could make use of these schedules and compare them with its own models. There is may be a way to get the best out of these 2 inputs.

Others

FEPEG appreciates the structure proposed by Elia in terms of segment. We are asking ourselves why there is no approach based on the geography or electrical zones. To our knowledge, the congestions appear frequently in 3 of them: Langerbrugge, Hainaut and Stalle. Why don't we focus on improving the data specifically for these regions? We also notice that some forecasts are structurally biased such as offshore generation forecast which are overestimated and consequently could make use of too frequent/ not strictly needed congestions. We could think about applying a top-down correction (based on the very last realized data) to get rid of those structural bias in specific electrical zones. If bottom-up approach leads to structural bias, Elia should apply a top-down correction to bring forecasts closer to realized data. For example, wake effect on wind turbines cannot be captured with a bottom-up approach and requires a top-down correction.

We like to repeat our main concerns, namely, FEPEG does not find acceptable to see structural bias in the forecast (in this case offshore) used in congestions, which remain uncorrected for several months in a row and that the costs of the congestions are externalized to some market participants.

Conclusions

FEPEG highly appreciated this study and that Elia gave clarity on how and which data are used in the predictions of congestions. We also appreciate the constructive spirit that indicates the improvement areas in this process. FEPEG can only reiterate that congestions should be limited to the minimum and should not be bore by market participants. It boils down to privatizing the costs and socializing the benefits. By pushing back these costs to MP, the incentives for Elia to address to issues are not sufficiently strong. Indeed, Elia should commit in doing everything possible to limit the costs of congestions: to invest at least the same amount of money in solving the root cause of the congestions (through ad-hoc projects, grid development) than the associated costs currently bore by market participants.

FEPEG wished to clarify that, in parallel to (or despite of) the criticism mentioned above, our purpose is to initiate a continuous improvement approach with Elia. We recommend that the identified improvements points are part of a roadmap implemented with high priority. Even small improvements are welcome, because the sum of small improvements will result in significant steps forward for market participants.

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