

ENTSO-E consultation on the "Deterministic Frequency Deviations" report

A Eurelectric response paper

February 2020

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:

- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

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1 Do you see any effects of Deterministic Frequency Deviations on consumers or generation units in your portfolio today?

As Eurelectric we do not have a portfolio (being an association), but we would like to raise the following comments:

- Frequency Quality is important both for consumers and generators.
- Consumers are more sensitive to frequency quality, both industrial clients for its processes as well as residential customers.

2 Are you already participating in any initiative to reduce frequency variations in Continental Europe? If so, which one(s)?

- It would be good that the report gives clarity on those initiatives. We do not know any “official initiative” as such.

For any initiative, we think that the following points should be respected:

- Requirements should be carefully analyzed. The report itself sets an objective of “an acceptable DFD = 75 mHz » whose implementation will become, to our understanding, an official “initiative” by ENTSOE.
- Governance: the report points out “that TSOs can choose the most effective and efficient measure to reduce its contribution to DFDs”. In that respect, structural solutions should not be solely decided by TSOs based on a given “quality target” which could be linked to the conjuncture.
- Measures are to be framed by a sound governance involving not only TSOs but also other stakeholders (producers, consumers, providers of Balancing...).
- Instead of each TSO triggering solely its own solution, RSC could provide guidance on a coordinated solution

Eurelectric regrets that solutions coming from load are almost absent in the report, for example efficiency from solutions coming from tariffs incentives could be analyzed.

3 One of the proposed solutions is to move towards 15 minute Market Time Unit for internal and cross-border energy exchanges. What would be the positive or negative effects of this on your business?

First of all, Eurelectric wonders about the value-added of the question, given that ISP of 15 minutes is mandatory and given the recent positions of ACER regarding MTU.

Many studies¹ show that frequency spikes remain in a context of 15 minutes MTU/ISP but with an amplitude far lower as today. Indeed, BRPs become incentivized to balance its energy on such MTU thus real-time generation comes closer to the real-time consumption. The report even shows the impact of 15 MTU on the behavior of aFRR. For instance, as mentioned on page 5 in the report, it is acknowledged that the best solution is the MTU of 15 min. Without any assessment, the report

¹ ENTSOE & Eurelectric. Deterministic frequency deviations – root causes and proposals for potential solutions. 2011. Stuttgart. Impact of current market developments in Europe on deterministic grid frequency deviations and frequency restoration reserve demand
GB. High Frequency Deviations within the European Power System – Origins and Proposals for Improvement. 2009

affirms however” that in addition, as permanent or intermediate measures”, following measures can reduce the impact and that preferred one is imposing restriction to market participants.

Eurelectric is opposed to unilateral constraints to market participants if it is not demonstrated that other solutions (i.e. MTU of 15 min and procurement of services) are not sufficient to solve the problem. Restrictions should only be last resort measures.

We therefore want to urge TSOs to further consider the contribution of 15 minute Market Time Unit with regard to frequency requirements in SOGL before introducing any additional constraints for market participants.

4 What do you see as main (remaining) hurdles to move towards 15 Minute Market Time Unit for Intraday and Day-Ahead energy markets?

- First of all, we would like to mention that the objective shall be to have a well and reliable functioning of Market Coupling as well as allowing flexibility to offer its capabilities.
- The recent discussions around algorithm methodologies for SDAC and SIDC showed that there are huge challenges in terms of algorithm performance for the auctions, since it increases significantly the complexity of the optimization while time constraints for running this optimization remain the same.
- Eurelectric is opposed to any reduction of possibilities for market players to use complex products in the day-ahead and/or the intraday timeframe in order to accommodate this increased complexity. This would indeed be detrimental to market efficiency and hence overall welfare.
 - The move to 15 min MTU should not be implemented at the cost of complex products which are heavily used by market participants today (cfr. [ACER consultations on the algorithm methodology review, incl. SIDC and ID auctions in November 2019](#)).
 - Moreover, derogations to the 15min ISP can still be applied until 2025. Hence Eurelectric wonders about the benefits brought by a 15min Market Time Unit for ID and DA without having it applied as ISP. BRP being incentivized to be balanced over the ISP, the existence of shorter market time unit would be superfluous.

5 One of the proposed solutions is to set requirements on ramping for Generation units. Do you have fast-acting generation units (ramping up or down in less than 5 minutes) in your portfolio?

As an association, Eurelectric does not own nor operate a portfolio, but Eurelectric members do own and operate fast-acting generation units. As SOGL does not favor generation over consumption ramping, Eurelectric wonders about the alignment of the report’s proposal with general EU principles.

Ramping of generation units is the complex result of many inputs both technical and environmental. Therefore, requirements on ramping could be difficult or impossible to implement, and if possible, they are costly.

As mentioned in question 3, Eurelectric is opposed to new/additional constraints imposed to generators.

6 Would you be willing to enable slower ramp up and ramp down (5 minutes or more) of these fast-acting generation units? What would you need in terms of rules or regulations?

Eurelectric considers that the way DfDs is currently addressed should be modified. The report is focusing on constraints and penalties instead of addressing products/services and market based approach.

Any solution shall incentivize physical response/behavior and not being a pure financial reallocation by means of penalties (which would reallocate money). Such “solution” should be envisaged in a well-designed market design and paid by the beneficiaries.

The report outlines that *“Any financial disadvantage for the individual market participant will be compensated according to the rules of EBGL Article 18(6)(I), hence this solution should not influence market behavior but only the physical activation”*.

Eurelectric deems that such principle is essential to envisage such option.

Producers involved should then evolve in a market design, in an optional way, and not be constrained unilaterally and without any stream of revenues. In other words, that TSOs could evaluate the benefits of defining and procuring such a (5/10min) product in the market (rather than prescribing it to all generators).

7 An identified cause of deterministic frequency deviations is the simultaneous starting or stopping of generation units or significant load at specific moments in time, usually at the change of an hour. Would you be willing to spread start and stop of units over a longer period? What would you need in terms of rules or regulations to be able to do this?

- At p21 in the report, EE says that the load changes are smooth. They induce in their report that the problem is only coming from the assets.

We consider that ENTSOE should look deeply on existing or planned levies which depend on design of Balancing Platforms. For instance, the use of mFRR scheduled activation will allow to delay physical responses by steps of 15 minutes. If existing or planned platforms do not resolve system operation issues and tailor-made solutions are to be retained by TSOs, TSOs should therefore assume such “solutions” as new ancillary services to be procured by the TSO by means of a market-based approach and paid by the beneficiaries. Producers that could be able to implement such “solutions” should not be constrained unilaterally and without any remuneration for the service provided.

8 One of the proposed solutions is to have ramping included in all Schedule exchanges between ISPs. What do you see as main hurdles towards implementation of such a solution?

- The efficiency on constraining Schedule exchanges between ISPs has yet to be demonstrated.
- In some countries the share of physical exchanges amount to about 10% compared to the overall generation
- Such constraint could induce swaps between fast units to slow units based on power dynamics and not operational expenditures (mainly fuel). This loss of overall welfare has to be assessed and compared to the benefits of reducing the risk of system operation.
- These solutions shall be envisaged after thorough assessment and when “no other measures are reasonably available or are sufficient to control its contribution to the DFDs “

- In addition, this would require IT investments, all along the “scheduling chain”, from the BRP, to BRP-TSO communication until TSO treatment of the schedules. Such investments, if needed by the TSOs, should be compensated by the TSOs to the market participants.
- This will create a new constraint on the production units and optimization processes. A degree of freedom is lost. Again, a product and market-based approach should be considered instead of constraining generation units.

9 Would the introduction of ramping in schedules lead to slower ramping of generation units in your case? What would you need in terms of rules or regulations?

The introduction of ramping in Schedules could be implemented:

- Either by modifying the underlying assets
- Either by modifying the optimization of the schedules (without any change in assets dynamics)
- Or a combination of the previous

Even though Eurelectric members have not assessed in detail the economic impact of such introduction, they consider it would be very costly.

Eurelectric would require more clarification before giving a more firm and more detailed opinion.

10 Do you see a future in having Battery Storage participating to Fast Frequency Reserves, which would help to reduce DFD? Do you have access to Battery Storage with such capability?

- ENTSOE report does not outline a clear need for “Fast Frequency Reserves”. Does the Fast Frequency Reserves refer to FCR or some new services? In order to allow more flexibility sources to provide fast frequency services, one need to allow the participation of decentralized resources.
- Should there be a need for a new Fast Frequency Reserve, ENTSOE should therefore assume such “solution” as a new service to be procured by the TSO by means of a market-based approach and paid by the beneficiaries.
- In addition, if such a product is developed because deemed necessary by the TSOs, the choice of the technology should not be restricted to battery storage. The Fast Frequency Reserves’ features being not developed yet (and only slightly considered in the DFD report), it is not easy to assess the question.

11 Do you have any other important comment to share on the report?

On the main causes of DFD’s (chapter 2):

The argument pointing energy markets as a source of increased DFD’s is exaggerated from our point of view, for the following reasons:

- If the hourly schedule changes and the behavior of generation units following block-shaped incentives are indeed the most important causes, the fast acting vs slow acting production units as well as the incompatibility between load ramping and block schedules (or generation ramping) have always existed and are not due to energy markets.

- The load pattern being considered as continuous fashion is a strange assumption (e.g. start-up of an arc furnace !), step-wise load pattern are a reality. Moreover, tariff incentives, for example at the switch between peak and off-peak hours exist in some countries. These incentives induce important power peaks around the hour.

In addition, we would like to mention that the problem caused by HVDC lines is really something which should be investigated before more serious problems appear when they will be more numerous.

It is also surprising that there are no investigation done in the report about not controllable generation assets (renewables) which could be a cause of increased DfD's too.

To support it, we refer to the example of Germany DfD's contribution examples (p.29) or the large changes in solar and wind (p.41).

We would also like to suggest to further elaborate the following: why was there a decrease in DfDs from 2011 to 2016 (figure 3 p 11) an increase after 2016? Even if the ENTSO-E report provides a wide view on DfDs, Eurelectric understands that ENTSO-E is unable to link the evolution of DfDs with structural/fundamental evolutions. Therefore, Eurelectric understands that TSOs views on DfDs and its "solutions" are accompanied by an important incertitude.

As we mentioned during the MESC meeting of July 2019, it seems that the subject of frozen measurement is not addressed in the report although it was clearly a cause of the issues in 10th January 2019. Eurelectric believes that the robustness of TSOs operation (e.g. frozen measurement) should also be among the portfolio of "solutions".

Eurelectric also wonders if the procurement of balancing capacity by blocks of 4 hours is exacerbating the issue of DfDs? Was this analyzed? We would recommend to have an investigation of it.

Last but not least, we can read in the report p29 and p40 that the wind turbines are creating issues at 10 pm due to noise emissions rules (it is referred as a cause of frequency deviation): could we get more explanation and details?

On the solutions addressing the root cause of DfD (chapter 4.3):

Eurelectric considers that the solutions to address the root cause should be prioritized:

1. 15 min MTU should be preferred and long term solution which
2. In the meantime, TSOs should opt for procurement of services:
 - Increase the volume of FCR (p5 of the report: paragraph proposed solution:
 - Balancing products and/or new services: if additional services are needed, their procurement and activation should be market based
 - We are surprised to read in the report (p5) that FCR increase is considered as a temporary measure
3. Constraints should be the last measures to implement, only if the other ones do not work

Eurelectric pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability



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