

24th Grid Connection European Stakeholder Committee (GC ESC)

07 December 2021 from 09:00-13:00

Microsoft Teams

Minutes of the meeting

Participants		
Addala	Srinivasa Raju	EUGINE
Alcazar	Freddy	EUGINE
Aren	Assiet	EUGINE
Benedict	Florentien	CEDEC
Buelo	Thorsten	SolarPower Europe
Buquet	Maxime	EUTurbines
Celozzi	Francesco	ENTSO-E (guest)
Chambers	Keith	Europgen
Chevillard	Naomi	SolarPower Europe
Dekinderen	Eric	VGBE
Eckstein	Steffen	EUTurbines (observer)
Gabrijel	Uros	ACER / Chair of GC ESC
Glapiak	Aleksander	ACER
Geraerds	Ton	VGBE
Gomes	Barroso Maria	ACER
Gonzalez	Adrian	ENTSO-E
Govindaswami	Sudharsana	Europgen
Guenzi	Luca	EUTurbine - Solar Turbine
Jevnaker	Torbjörg V S	observer
Kaestle	Gunnar	COGEN
Kay	Mike	GEODE
Klonari	Vasiliki	WindEurope

Lewis	Thomas	EASE
Luxa	Andreas	orgalim
Moreira	Joao	ENTSO-E (guest)
Ndreko	Mario	ENTSO-E
Oberhauser	Klaus	VGBE
O'Connell	Elaine	European Comission (ENER)
Pasquadibisceglie	Marco	Arera
Pfeiffer	Ralph	ENTSO-E
Quere	David	CENELEC
Schaupp	Thomas	CENELEC
Schowe-von der Brelie	Bernhard	EFAC / VAZ (FGH)
Sermanson	Vincent	ENTSO-E (guest)
Theologitis	Ioannis	ENTSO-E
Van Bossuyt	Michaël	IFIEC Europe
Vinas	Thierry	EURELECTRIC

1. Opening

1. Review of Agenda

The Chair welcomes the participants to the 24th GC SC meeting and reviews the participants list to ensure that only members of the Committee or/and alternates that have informed the Chair are connected.

The agenda is presented and approved (available [here](#))

The Chair asks for any additional topics to be covered under AOB. No topics are suggested.

The Chair gives the floor to Ralph Pfeiffer (ENTSO-E) who gives farewell notes to the members of the GC ESC. This will be the last meeting for Ralph who due to internal Amprion changes, will be required to follow other responsibilities. Ralph has been a key member of the GC ESC on behalf of ENTSO-E and a main SPOC for connection codes over the last twelve years. The Chair in the name of the GC ESC thanks Ralph for all his contributions and wishes him good luck with his future endeavours.

2. Approval of the minutes

The minutes are approved with no further comments (available [here](#))

3. Follow-up actions from previous meeting/ new additions to Issue Logger (available here):

Ioannis Theologitis (ENTSO-E) presents the follow-up actions and their status from the previous meeting.

Eric Dekinderen (VGB) recalls an action related to the work of EG ISSM on a new grid user (i.e. PGM or demand) that is connected in the close electrical vicinity of HVDC system and asks about its status.

Ioannis replies that this is a past action that is assumed closed unless new reactions are shared. ENTSO-E presented respective slides in the previous meeting and the answer has also been uploaded on the Issue Logger. If of course there will be any new input to this topic – as for every topic listed in the Issue Logger – the GC ESC can further discuss.

Eric mentions that the last point shared for this discussion was that the current legislation was not conceived to solve the problem.

Luca Guenzi (EUTurbines) adds regarding the action related to the work that EUTurbines and VGB prepared with the organisation of three workshops to discuss several possible amendments. Luca highlights that after the last workshop and the request for review, mainly editorial improvements we sent back and incorporated to the final report, but no substantial changes. The document is considered final and ready for distribution.

2. CNC implementation – ENTSO-E updates

Ioannis Theologitis (ENTSO-E) and Ralph Pfeiffer (ENTSO-E) present the slides (available [here](#))

Mike Kay (GEODE) asks whether a half day or full day workshop is foreseen.

Ioannis replies that with the current draft agenda as proposed, half day will be enough. Presentations can be concise and allow for more discussions which is the goal of the workshop. If more agenda points will be proposed by stakeholders, then we will consider extending the time of this workshop or planning a second one in the near future.

Marco Pasquadibiseglie (Arera) asks when is expected to conclude to a final date (from the two proposed).

Ioannis replies that if both dates are convenient, then he will check them with the presenters once more and communicate the final date in the next couple of days the latest.

Luca Guenzi (EUTurbines) asks if this will be a physical meeting or a web-conference.

Ioannis clarifies that this is scheduled as a webinar.

Following up the presentation on the ENTSO-E's Monitoring Report for 2021, given by Ralph, the Chair asks whether the feedback from stakeholders could lead to an Implementation Guidance Document (IGD) which could contain certain relevant recommendations.

Ralph replies that such an option cannot be excluded of course, depending on the feedback received and if it includes indications for improvements. Typically, an IGD can be an appropriate vehicle.

The Chair concludes that such Monitoring reports prepared by ENTSO-E with the variety of topics that they address are very important to build the appropriate understanding on how the Codes have been implemented across the Member States, understand possibly best practices, assess them and then proceed possibly and in a smoother manner to any needed changes (soft regulation).

Regarding the topic of P=const behavior of some loads connected via power electronics, Mike reports that he received no feedback yet from the DSOs that he approached.

ACTION: ENTSO-E to communicate the details of the proposed workshop on RoCoF in 2022.

3. *ACER CNC Monitoring Report*

Aleksander Glapiak (ACER) presents the slides (available [here](#))

Luca Guenzi (EUTurbines) acknowledges the importance of this type of work.

Michaël Van Bossuyt (IFIEC Europe) asks if there is a list with the items that have not been implemented or non-compliant.

Aleksander replies that such information exists in the report itself which provides the information per NRA including the ACER's assessment to it.

4. *Frequency stability in long-term scenarios*

Joao Moreira (ENTSO-E) presents the slides (available [here](#))

Michaël Van Bossuyt (IFIEC Europe) asks about the foreseen time for implemented the solutions and some of those conclusions presented.

Joao replies that at the moment the focus is on presenting the challenge and conducting an in-depth discussion – using as a good first opportunity the future workshop that was presented before. Solutions are outlined but concrete steps will require good understanding and agreement. Therefore, no timelines are available yet or even any suggestions for optimal mix of solutions.

Michaël adds that 2030 or 2040 horizon might provide some time to prepare but 2025 is close. Is there any intention to implement some first faster measures from the list and then gradually work on the rest?

Joao agrees that the discussion on this topic is timely and important. We will need to develop and consider solutions independent from their contribution to the mix or the exact time to be implemented.

Luca Guenzi (EUTurbines) asks a series of questions: can the models or any information on the scenarios be made available? Also, regarding the different scenarios, how have those been considered e.g. which type of evolution on generation characteristics and load characteristics and control logic? How have those been modelled? Is there an aging assumption for the existing units considered and their substitution with new units? The results appear per country. Is the analysis based on single busbar configuration? Last, how do you reflect the re-connection process which is also more operational consideration. Finally, if the possibility of a controlled system split has been considered, which may help avoiding a bigger effect (localize the split).

Joao replies that the scenarios are the ones published with the TYNDP. Therefore, we respected all the timeframes and assumption of electricity mix and demand from TYNDP. On the modelling part, for this exercise, the team didn't use the single busbar model and no time simulations have been performed. This is an instantaneous evaluation of what would be the expected RoCoF resulting from a market analysis. As regards the market analysis, we have for each market node any given combination for each generation and then we can have a very good estimate of the available inertia. From the expected flows between the nodes, we also know the initial imbalances and then we calculate the theoretical initial RoCoF. Simple model but provides a very good perspective for different types of splits in different hours.

Regarding the availability of those model (publicly), is not sure how the TYNDP models from the market simulations are made available. The Chair clarifies the question by asking about the assumptions that were made on generation and load. Joao replies that probably there is no particular issues on this. Francesco Celozzi (ENTSO-E) adds that this is noted to be checked but most likely all these info is public information already (TYNDP 2018). About the model itself, if the request is to get the script that was used, this needs to be checked.

Luca continues that is important to understand how the evolution of the technology and control schemes is taken into consideration in the model. Joao replies that the model shows the initial conditions after the split and it doesn't show the overtime evolution, meaning that the behavior of the generators is not considered. For the same reason, the reconnection process is also not reflected.

Luca adds that this is understood and then this reflects mainly withstand considerations. Because for the product itself and according to the standards is not only one short timeframe that we need to consider (100msec, 500msec etc..). The timeframe is longer (as shown also in the slides e.g. 1 sec) within which the unit will react somehow.

The Chair asks from ENTSO-E to consider publishing the assumptions that were used in the model and the calculations, so as to allow for re-calculation from interested stakeholders. That publication could also be useful to take place in good time before the workshop (if possible) so as for stakeholders to prepare informed comments.

Francesco clarifies that results of this analysis are already available online since yesterday and assumptions are included in the publication.

The Chair reminds the question from Luca on the control splits. Joao replies that this point was raised during our internal discussions and is noted to be considered in the set of optimal solutions.

Ralph Pfeiffer (ENTSO-E) highlights the solution about providing additional inertia by RES, storage or TSO own assets coupled with considerations on grid forming capabilities. For example, German TSOs have published recently a position paper that all STATCOMS should have grid forming functionalities and be ready to be coupled with energy storage. What is challenging in the grid forming discussion is the timeframe needed to have the functionalities ready. Typically, those should be reflected in connection codes but the discussions are taking time until we establish anything at EU level and then considering the national implementation we may be seeing a timeframe of several years and in the meantime the system will have more and more of generating units without such capabilities.

Ton Geraerds (VGBE) shares the concerns from Ralph but expresses own concerns regarding the little focus on avoiding the system splits in the first place. The focus in the slides seems to be more on mitigating measures. If we look in the recent past, we can see that the majority of the incidents are caused by human faults. We should put some effort on training the experts, implementing procedures and creating a more bulletproof control system. That could be a low-hanging fruit.

Joao acknowledges the point and stresses that several solutions should be in place to improve the situation and the intention today is not to give certain weight to some of them. Joao adds though that situation is also changing rapidly and the causes of system splits – beyond the human error – need to be investigated too.

Luca follows up on Ralph's position and says that we should try to keep the complexity low and also find a way to link the specific conditions of the grid to the generating units and controls.

Eric Dekinderen (VGB) in reply to Ralph's comments, believes that the fast approach to solve this issue is the market restrictions as a reduction of power exchange and must run. Is that correct? He also asks what does ENTSO-E mean when it says that $\text{RoCoF} > 1\text{Hz/sec}$ is unmanageable?

Joao replies that 1Hz/sec is the operational limit that is currently defined by the dynamic experts and refers to the RoCoF at the centre of inertia.

Eric continues by asking, whether we mean that higher than 1 Hz/sec has serious consequences for the generating units.

Joao replies that we mean that higher than 1 Hz/sec may have serious consequences to the system with subsequent effects that can lead to further instabilities or loss of generation etc.

Ralph replies that market restrictions may seem as a fast solution indeed because you will have less transients over the bidding zones, which means less load imbalances and less severe consequences of a system split. However, we believe that market restrictions are against any political will or objective of energy policy. That is why it is assumed only as a last resort solution. We need to take measures to facilitate the market and not restrict the market.

Eric asks if market experts are aware of such risks.

Ralph replies that he doesn't know specifics on this, but he trusts that it should be of their concern since at that point it will be all about system security which is a core responsibility of the TSOs. All market activities are assumed with the fundamental consideration that system security is not compromised.

The Chair reminds the Committee that one of the recommendations from the 8 January investigation was that TSOs should coordinate NTCs particularly in the region that was involved in the event and therefore the market experts are aware of the potential impact due to operational reasons and also of the impact of the exchanges between large geographical areas and the need for coordination. Of course, RoCoF scenarios are now presented for the first time, and this is a first input after the one we had in the past within the minimum inertia and dynamic stability workshops. The Chair says that a fit for purpose comprehensive roadmap is needed, considering the urgency that needs to be taken into account to address these issues and also the involvement of the market experts, to address both the operational aspects and ancillary services to be considered.

Ralph agrees with the Chair – coordination is needed with system operation since those will provide the conditions for system security within which the market products will be defined. The Chair agrees with the statement and adds that TSOs should define those conditions based on well explained needs coming out from relevant studies.

Thomas Schaupp (CENELEC) shares the view of Ralph regarding the extended timeline until we see in practice new relevant requirements implemented. Thomas adds that this topic can also be possibly dealt within CENELEC in a relevant technical committee as a preparatory work or faster route to have it implemented.

Francesco provides a clarification regarding a statement by Eric, saying that this ENTSO-E study does not assess the risk/probability of a black out or a severe system split. We acknowledge in the study that this a needed follow up to be considered.

Mario Ndreko (ENTSO-E) adds that system split is important for frequency stability, but we should not also forget that it might lead to issues of robustness of existing units – is not only RoCoF to consider. New capabilities for generating units and loads are required. Second, the high RoCoF is important for the protection scheme and defense plans that need to be defined and may be affected due to those high values.

Marco Pasquadibisceglie (Arera) contributes to the reply to the question from Eric (on behalf of the NRAs) and says that market experts do know about the impact extreme cross-border trade may have on the system, but unfortunately there is a regulatory challenge, quoting the 70% rule that needs to be taken into account. This rule in a meshed environment may probably have no impact but if one considers this in a critical section you may risk having a system split. Is not the market that causes that necessarily, and huge flows aggravates the issues and increases the risk of adverse consequences. NRAs are concerned but not all NRAs find this extremely relevant. There are some that believe that market will provide the solutions needed and others (e.g. Arera) that prefer to allow more investments from TSOs to maintain a very robust system. This debate will only become more frequent in the future.

5. GC ESC Expert Groups – Comments from GC ESC review on Criteria for significant modernisation (EG CSM)

Eric Dekinderen (VGBE) presents the slides (available [here](#))

The Chair mentions that at GC ESC we should discuss to what extent we can agree on a way forward and mitigate such issues in the future. Any content related aspects should be discussed with the EG CSM directly.

Ioannis Theologitis (ENTSO-E) clarifies how the situation with the publication occurred, mentioning that as agreed in the previous GC ESC meeting and communicated by separate email too, the report was sent to GC ESC members for acknowledgment. It was explicitly noted that the publication of the report should not be postponed or compromised if there are any additional comments (which can be noted for future reference and when we return to those amendment proposals during the official amendment process). Ioannis stresses that he acted as a person that facilitates the EGs' work and organisation on behalf of the GC ESC and not as ENTSO-E representative in the group. The actions taken were with respect to the agreement taken in September's GC ESC meeting. What is more, Ioannis mentions that there were even proposals to address the concerns from VGBE, but no reason to postpone the publication until December's meeting until we agree on which option is better. Furthermore, such decision is not of Ioannis to take but the EG CSM and its Chair.

Concluding, Ioannis mentions that “minority” opinions can be listed in the reports and have been listed in past reports too e.g. EG MCS, EG BftA etc. This is not a new practice. We can apply it in the EG CSM report too and have a second version with an indication that will mention that type of addition that was made in comparison to the existing version 1 of the report.

Thomas Schaupp (CENELEC) wonders what was the discussion in the EG CSM on this since the report was agreed by the EG CSM members (VGBE members included). Did the EG Chair decline the points? And if so, why the point was not raised in September’s meeting?

Eric replies that some of the points were raised in September orally, but the main problem from the EG side was the lack of time.

Thomas adds that then is a bit harsh to bring such criticism to the management of the GC ESC, if the VGBE members during the time of the EG were not able to bring those topics to the EG itself which is the appropriate body to address them.

Eric agrees that this would have been much “cleaner” solutions if the comments had been raised earlier. The issue was that opinions at a certain stage were diverging a lot (EGs’ and VGBE’s) and wasn’t clear if minority opinions are allowed.

Mike Kay (GEODE) adds that as a member of this EG, he doesn’t remember those point being tabled at all and the timeline of this EG was not particularly tight (not compared with other EGs at least). Mike also mentions that the proposed solution to add an Annex is fine for him too and on top would be also appropriate for the EG Chair/EG to add a commentary to each of those points – on how the EG addresses (to which ever extend) those points.

The Chair agrees with the proposal from Mike. It is appropriate for the EG to have a say on the way the comments should be added and not have GC ESC inserting comments to a report that was developed entirely from a dedicated group.

The Chair concludes that in the spirit of fruitful collaboration that this ESC has been working on over the last years, all member-associations should avoid strong statements and accusations, especially when background and rationale for certain actions is not known.

Ton Geraerds (VGBE) asks how can we prevent similar occasions happening again in the future i.e. comments shared by members and not taken into consideration.

The Chair clarifies that there is a process and timeline defined in all EGs, within which a review process by GC ESC members is included. It is not efficient to come last minute (before final acknowledgement and publication) with a list of important comments because then it is difficult to assess them without prolonging the time and resources of the respective EG. The role of the Chairs is to allow sufficient time for all members to review and send comments on time. If (and not sure if that was the case for this EG) comment come at a very late stage, then this is an issue for the members themselves and not an issue of the GC ESC to solve whose role is to ensure that the mandate was fulfilled according to the defined ToR. Anyhow, the current issue will be remedied as proposed.

Mike adds again that apart from one point that was discussed and agreed with all members, the rest of the points were not explicitly raised – not at least during the final drafting of the report.

The Chair reminds that the EG reports are not the final amendment proposals. They are good preparatory work that is shelved for when the official amendment process will open.

ACTION: The EG Chair to assess the comments provided by VGBE and the proposed solution by GC ESC to list them in an Annex with a short commentary/reply on behalf of the EG CSM, creating a second version of the report to be published.

6. GC ESC Expert Groups

Expert Group: General status

Ioannis Theologitis (ENTSO-E) gives a brief oral status report on the preparatory work for setting up the new EGs. There have been enough contributions to the draft ToRs and to submitting nominations, with one group surpassing 40 members and another one following with similar number of members. The group on offshore requirement currently has around 15 members due to the specific nature of the topic.

It is clear that there are expectations from all members to work and deliver and this is highly appreciated. All experts that lead the creation of the draft ToRs took appropriate time to treat all the comments and create final drafts. Ioannis reminds that ToRs are high level description of the topic, the objectives and the task to be performed in order to deliver the final report. Details on topics are not meant to be included and will be subject to EG's discussions. Ioannis also mentions that all EGs have proposed Chairs apart from the one on advanced capabilities – fact that may delay the kick off.

Expert Group: Advanced Capabilities for Grids with High Shares of Power Park Modules

Thorsten Buelo (SolarPower Europe) presents the draft ToR (available [here](#)). A version with track changes showing the comments received was also used.

Thomas Schaupp (CENELEC) highlights that it is important to be precise on the relevant definitions so as to facilitate an efficient work. For instance fast fault current injection is similar to short circuit current.

The Chair asks whether in the storage reference, the electrical vehicles (V2G) are also included.

Thorsten replies that this part was taken from the EG on storage, so everything that was considered there should be assumed. The Chair would appreciate this explicit reference without any intention to be exhaustive in all technologies.

Florentien Benedict (CEDEC) remembers the report from ACER on EVs that was presented within the framework of GC ESC and asks whether this report is publicly available.

The Chair replies that this report was never meant to be publicly available. It was circulated within NRAs but it was never planned for external publication. Nevertheless, the report was not entering into the same level of technical details as in this EG case.

Eric Dekinderen (VGBE) asks about the specific point on interaction with existing units. Is this an objective or a point for consideration? If it aims at being an objective, it should also include the consumers that can be affected.

Thorsten replies that there is a point regarding interaction with existing synchronous generators. The focus of the EG is assumed, for now, on generators and not consumers so as to rationalise the work within the proposed timeframe.

The Chair proposes not necessarily to focus on the consumers part, but not entirely omit it from the scope.

Thomas shares that looking at the current description of the EG, the work is rather ambitious and challenging (even without EVs and loads). It would be possibly better to focus on what is already proposed in the current ToR and any new additions can be treated in a second version of the work/report.

Michaël Van Bossuyt (IFIEC Europe) comments that investigating loads is very interesting and should happen, but it can be a quite challenging and burdensome work which could be handled separately. Cost implications of new requirements will need to be considered thoroughly in each type of consumer – residential and industrial – which may also affect the membership of the EG (enlarge it even more due to the different expertise needed). Michaël says that for the EVs, the discussion will partly take place through storage.

The Chair proposes that the EVs and loads could be covered under the objective that will check the technology readiness. We may not then address the needed specific requirements but at least acknowledge the existing solutions.

Michaël mentions that we could try but for V2G there are not many practical cases to consider and for loads we will need enough time to identify different categories.

The Chair concludes that EVs can be treated as part of the storage definition (to be explicitly mentioned in the ToR) and for loads, the evolution of work within the EG will determine that.

Regarding the lack of Chairmanship, the Chair agreed with the proposal from Thomas to reach out to the members of the EG and request whether there is any volunteer.

ACTION: The drafting team of the ToR of Advanced Capabilities for Grids with High Shares of Power Park Modules to explicitly add the electrical vehicles within the scope as a point for investigating current technology status in relation to the capabilities to be analysed.

ACTION: Ioannis to invite the current nominated members of the Advanced Capabilities for Grids with High Shares of Power Park Modules EG to consider assuming the Chair/Vice Chair role of the EG.

Expert Group: Harmonization of Product Family Grouping and Acceptance of Equipment Certificates in European Level

Freddy Alcazar (EUGINE) presents the draft ToR (available [here](#))

Expert Group: Identification of Connection Requirements of Offshore Systems

Mario Ndreko (ENTSO-E) presents the draft ToR (available [here](#))

The Chair requests whether there is any objection to approve the draft ToRs as presented today with the note that for the advanced capabilities ToR, the small addition in the scope regarding EVs will be added and also possible modifications of the timeline due to lack of Chairmanship are likely.

ToRs are approved.

7. CENELEC updates – Work Program of TC8X WG03

Thomas Schaupp (CENELEC) presents the slides (available [here](#)).

Freddy Alcazar (EUGINE) asks for a clarification regarding the publication date in 2022 vs 2023.

Thomas clarifies that this is dependent on the voting process. If the 70% majority threshold has been reached and no major technical comments are shared for consideration, the publication can happen in 2022.

Freddy continues by asking whether 50549-3 and -4 for larger units are planned.

Thomas replies that there are no plans but have been discussions on this. However, the interest doesn't justify the effort (yet) and also new member-experts will be needed.

8. AOB

The dates of the GC ESC meetings in 2022 were presented and confirmed. Possible that June's and September's meeting will be physical depending on the developments of the COVID-19 pandemic.

9. Follow-up actions:

1. ENTSO-E to communicate the details of the proposed workshop on RoCoF in 2022.
 2. The EG Chair to assess the comments provided by VGBE and the proposed solution by GC ESC to list them in an Annex with a short commentary/reply on behalf of the EG CSM, creating a second version of the report to be published.
 3. The drafting team of the ToR of Advanced Capabilities for Grids with High Shares of Power Park Modules to explicitly add the electrical vehicles within the scope as a point for investigating current technology status in relation to the capabilities to be analysed.
 4. Ioannis to invite the current nominated members of the Advanced Capabilities for Grids with High Shares of Power Park Modules EG to consider assuming the Chair/Vice Chair role of the EG.
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