# 30th Grid Connection European Stakeholder Committee Meeting (GC ESC)

15 June 2023 from 09:30-17:00

Hybrid (Brussels & remote)

## Minutes of the meeting

| Participants | | |
|---|---|---|
| Alcazar Barrientos | Freddy Eduardo | EUGINE / EG HFC Chair |
| Antonopoulos | Georgios | ACER |
| Aren | Assiet | EUGINE |
| **Barroso Gomes** | **Maria** | **ACER / Chair substitute of GC ESC** |
| Benedict | Florentien | CEDEC / EG ACPPM Chair |
| Biellmann | Herve | EUTurbines |
| Cerretti | Alberto | CENELEC |
| Chambers | Keith | Europgen |
| Dekinderen | Eric | VGBE |
| Dembi | Vidushi | WindEurope |
| Eckstein | Steffen | EUTurbines |
| Gallego | Santiago | EDSO for smart grids |
| Glapiak | Aleksander | ACER |
| Gonzalez | Adrian | ENTSO-E |
| Guenzi | Luca | EUTurbine - Solar Turbine |
| Hearne | Tony | EURELECTRIC |
| Kaestle | Gunnar | COGEN |
| Kay | Mike | GEODE |
| Martines Villanueva | Sergio | ENTSO-E |
| Melnychenko | Mariia | ACER |
| Ndreko | Mario | ENTSO-E / EG CROS Chair |
| Oberhauser | Klaus | VGBE |

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|---|---|---|
| Pasquadibisceglie | Marco | Arera |
| Raju | Srinivasa | EUGINE |
| Schowe-von der Brelie | Bernhard | EFAC / VAZ (FGH) |
| Stoessl | Martin | Orgalim |
| Treichel | Julian | CharIN |
| VASILAKI | Evangelia | ACER |
| Van Bossuyt | Michaël | IFIEC Europe |
| Vinas | Thierry | EURELECTRIC |
| Zastavnetchi | Dmitri | ENTSO-E |

## 1. Opening

### 1. Review of Agenda

The Chair welcomes the participants to the 30th GC ESC meeting.

The agenda is presented and approved (available here).

Sergio Martinez Villanueva (ENTSO-E) requests to present the ENTSO-E's position on EG HCF proposal after EG HCF presentation. The Chair approves the request.

### 2. Approval of the minutes

Mike Kay (GEODE) requests to send the materials for the meeting sufficiently in advance to allow for the preparation of the agenda and for the publication of the documents on the website. Adrian reacts that most of material was circulated after the deadline, and he asks the members to send the material in advance.

Eric Dekinderen (VGBE) asks regarding the circulation of the minutes of last GC ESC meeting. Adrian Gonzalez (ENTSO-E) replies that the minutes of the last meeting were uploaded a month ago.

The minutes of the last meeting are approved and available here.

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

Adrian Gonzalez (ENTSO-E) presents the follow-up actions and their status from the last meeting. Following the requests from EUGINE and EUROPGEN, exchanges on RoCoF involving manufacturers and stakeholders took place in May. ENTSO-E committed to providing EUTurbines with boundary conditions. This objective was met in mid-April. EUTurbines will finalise the simulations according to the boundary conditions. Regarding the Expert Groups, a request from ACER in the EG HCF was made to converge into concrete amendment proposals, and the EG ACPPM was asked to circulate the report among members for revision and to have it ready for approval for the meeting.

## 2. GC ESC Expert Groups

**Advanced Capabilities for Grids with High Shares of Power Park Modules (EG ACPPM) – Report for approval**

Florentien Benedict (CEDEC) presents the slides (available here).

Mario Ndreko (ENTSO-E) thanks the EG ACPPM for considering the ENTSO-E comments on chapter 10. He appreciates the good work that was done with the report, and he mentions that a big step forward was made for what is needed for the future. Florentien mentions that she will share the good feedback and compliments with the Expert Group and confirms that all proposals from ENTSO-E have been integrated in the report.

Gunnar Kaestle (COGEN) makes a remark on the main issue related to chapter 10. He says that it was clear that although it is not a market-based environment, it is important to point out that part of the solution could be a market-based incentive. In his opinion, more research is needed on stability issues, it is important to do some tests to ensure success.

Mario Ndreko (ENTSO-E) mentions that although it is written in the report that research is needed for distribution systems, it's important to clarify that not all parts of the distribution systems in Europe need to be submitted to research, this should be done only for some specific designs or voltage levels. It should be made clear that some TSOs which have higher voltage levels than normal might be currently ready. Mike Kay (GEODE) reacts that the focus should be on the lower voltages. Connecting grid forming plants at higher voltages where there is more instrumentation and more quality control of the network is quite reasonable. However, research should cover the whole spectrum, and the focus should be on the low voltages. It is added that in addition to research, a roadmap is also needed to see how things can be implemented. Gunnar Kaestle (COGEN) explains research is needed in some areas where the Distribution System Operators do not have big issues because it is specific to the type of System Operator. Some System Operators have problems due to the stabilisation of the grid. These issues, so far, could not be solved easily. The general picture is that if there are several implementations of the grid forming algorithm and of synthetic inertia in the future, this may cause interactions independently of where it is installed, if not thoroughly tested. So, if for instance, it was decided to build a multiterminal HVDC system with an inverter from 3 different companies, if the details are not aligned, it might cause issues. It is recommended to do some research on combining different kinds of algorithms.

The Chair approves the EG ACPPM report.

**Harmonization of Product Family Grouping and Acceptance of Equipment Certificates in European Level (EG HCF)**

Freddy Alcazar (EUGINE) presents the slides (available here).

The meeting will be one of the final meetings of the EG HCF. The action items and the next steps are presented.

**EG HFC proposals on RfG 2.0 legal text – ENTSO-E position**

Sergio Martinez Villanueva (ENTSO-E) presents the slides (available here).

The Chair asks Sergio Martinez Villanueva (ENTSO-E) to share the slides of the presentation.

Georgios Antonopoulos (ACER) thanks the expert group for accommodating ACER's request to provide the legal text proposal after the draft report and asks ENTSO-E to clarify its objections about the legal text. Due to ACER's internal processes, it might not be possible to make any changes to the legal text proposal for the public consultation. He asks for a common agreement to be established between all the parties for the legal text proposal, and for ENTSO-E's opinion on submitting the text in its current state, without making additional changes.

Sergio Martinez Villanueva (ENTSO-E) responds that although everything proposed is not rejected, the level of detail should be revised, and that Chapter 1 cannot be included, as it is part of a different document. There needs to be a proposal with a minimum set of amendments that do not overrule the existing standards.

Bernhard Schowe-von der Brelie (EFAC) addresses some of the issues. Regarding the fact that the text amendment had not been discussed and regarding the shortness of the consultation time in the Expert Group, the text proposal was taken from the report and was already considered of high quality. Clear references to each article and an amendment have been made in the initial report. The text has been elaborated, published, and acknowledged in the stakeholder committee during the March meeting, and has been taken into the text proposal for RfG revision. In addition, Bernhard mentions that standards cannot be expected in the coming year, nor the next. This is quite critical because the stakeholders involved in that group shared doubts on whether these guidelines which will be solely focused on renewable will help the RfG implementation with respect to the certification framework. Therefore, there won't be a European standard, which is the reason why the objectives were taken from the Terms of Reference for the EG to create a harmonised framework to raise acceptance when such certificates will be handled in the notification processes. Bernhard refers to slide 5, ENTSO-E's concerns to the Expert Group. The equipment certificate on PGUs component level provides a certified valid proof of the technical capabilities of the components of the PGUs, which is why the umbrella certificate which will provide a capability certification has been introduced. Regarding the difficulty to compare the mutual recognition of the different technical requirements, he explains that the EG has provided some guidance in the report, and this has now been taken to Article 42 as there is a need for a framework on how national System Operators can handle the international certificate. Article 41 also provided a lot of new approaches and pathways to accelerate the availability and acceptability of such certificates. Regarding the grid code compliance certification, more effort was spent on defining the specified requirements which can be found in Article 41. It was agreed that the different approaches must be mentioned. On the IGD, there are still recommendation on where all the content should be moved. There is fear that a lot of certificates will be established on the international level.

Alberto Ceretti (CENELEC) comments that once the 50549-10 document including the results of a 2 year-discussion about the 250 comments is produced, the requirements will be covered. It is still not clear if the reference to these standards covers all the aspects, such as digital simulation. The topic should be discussed within the working group 3. Alberto recommends making a reference to normalise standardisation documents as a basis for the circulation for a single European certification, because each country could give a compliance certificate made based on its own experience. The proposal edition 2 of 50549-10 is being closed, the results of HCF will be included. He asked the members of working group 3 involved in HCF for a comparison table on the difference between HCF results and 50549-10.

Luca Guenzi (EUTurbine - Solar Turbine) comments that EUTurbine supports the work done by the Expert Group, and the statement from Bernhard. He says that if the compliance process isn't properly structured, there is a risk of proliferation of different compliance methodology, which should be avoided. On another note, the proposal that was made is detailed and was based on past experiences. There is a growing number of Member States that have been creating their process, and it has been noted that some past mistakes have been repeated. He refers to Germany and to the procedure described in the FGW DF3, revision 26 document. The reason why the proposal is so detailed is because it has been noted that the same mistakes are being repeated. The goal is to avoid doing the work again as it is the 26th revision of the document. He also mentions that the text is flexible enough to allow space for evolution, as revision 27 is already expected. He asks Sergio which content should be expected in the RfG and asks him to share the alternative text proposal. He makes a comment to the IGD and shares his opinion that it is not a good idea. A compliance IGD has already been done and what is expected is something that provides good lines forward. European standardisation is also important.

Sergio Martinez Villanueva (ENTSO-E) reacts that there is space for a discussion on this and ENTSO-E is open to it. There is no alternative proposal on the text. There must be a content in RfG that is too general. TSOs or DSOs must make a reference to the certification process to be followed by the PGMs.

Assiet Aren (EUGINE) mentions his concern about the statement of ENTSO-E regarding reducing the cost. He emphasises on the importance of testing, as well as the permission from the grid operator. A solution is needed as well as harmonisation.

Gunnar Kaestle (COGEN) clarifies the whole process. He states that from a manufacturer's point of view, it is quite important to have harmonisation, to avoid several different procedures taking up the time and resources. It's a 2-stage process. Step 1 consists in testing, then step 2 consists in certification. To have a certification process, there must be either national or EU regulations. The question of the third party that will perform the work must be included in a legal document, for the remaining items, the 50549-10 document should be the reference. He provides link to ISO/IEC Directives Part 2 and makes reference to Chapter 33 – Aspects of conformity assessment.

Mike Kay (GEODE) comments that from the EU DSO Entity point of view, the legal text has not yet been circulated. More time is needed to examine the legal text and provide feedback.

Bernhard Schowe-von der Brelie (EFAC) comments on Alberto's remarks that it is critical to include a reference to the EM standard into the RfG. 50549-10 would be one evaluation measure in terms of testing, and it should have a clearly defined standard on how to proceed. He responds to Sergio that for a full certification programme, 1 to 2 years are needed.

Adrian Gonzalez (ENTSO-E) makes a summary of the key messages to take away. ENTSO-E is fully open to discuss any amendment proposal, and there will be a chance for that in the coming months, as the public consultation gets closer. He shares that given the long period of time that it required to work on the report, and yet with no amendment proposal, he expects that it will be quite challenging to reach an alignment by the end of the summer. Some content regarding the certification was already submitted in September, and although it is encouraged to continue the discussions in the coming months, the timing for the preparation of a legal proposal that would be agreeable to everyone is challenging.

Freddy Alcazar (EUGINE)responds suggesting for the Expert Group and ENTSO-E to have a discussion, but it is important to start with the existing proposal.

The Chair urges the parties to continue the discussions to reach an alignment and provide feedback.

ACTION: ENTSO-E to organize two meetings with EG HCF and ACER (as observer) to review the legal text proposal of EG HCF and to reach an alignment.

**Expert Group: Identification of Connection Requirements for Offshore Grids**

Mario Ndreko (ENTSO-E) gives an update on the Expert Group (available here).

The Expert Group CROS requests ACER to approve the start of the public consultation in GC ESC from 15 July until 15 August, and requests for an extension due to the RfG and DCC amendment process. The final report is to be submitted by 1 October. A draft of the amendment document is requested. Mario responds that it can be shared within GC ESC pending ACER's approval.

Gunnar reacts to Mario's presentation asking if it is possible to have the 3 codes in the Grid Connection together as a package. He references to the Mario's presentation and mentions that some findings about the HVDC amendment might also relate to ENTSO-E. It will not affect this year's schedule, but it might be the case in the long run, therefore, it might be wise for the European Commission to put the 3 codes in the same basket.

Georgios replies that for now, there is no timeline for the HVDC amendment process, the timeline with the expected start of the process has not yet been communicated to ACER by the European Commission. It is expected to start next year but joining all the processes in a single package is not expected for now.

Gunnar asks if would constitute a regulatory risk to have each process separately instead of putting them together. He wonders if it would increase coordination between the 3 grid connection codes.

*Coffee break*

## 3. Grid Connection NC amendments and way forward

Aleksander Glapiak (ACER) and Georgios Antonopoulos (ACER) present the Grid Connection Network Code Amendment and the way forward. The slides are available here.

Eric Dekinderen (VGBE) asks regarding the location and the duration of the public workshop scheduled on 19 July. Aleksander responds that it is expected that the workshop will be hybrid, taking place both in Ljubljana and online. The duration of the workshop has not yet been decided but it could be half a day. Further details will follow once the organisation details are finalised.

Gunnar Kaestle (COGEN) comments on the timeline. He asks if European Commission is aware about the timeline and he suggests putting three codes in one basket (i.e., RfG, DCC, and HVDC). Georgios Antonopoulos (ACER) replies that there is no time for HVDC, but ACER doesn't have any recent communication from European Commission on HVDC.

Thierry Vinas (EURELECTRIC) asks for clarifications about the organisation of the workshop and whether stakeholders will be allowed time to ask questions on topics that are not intended for debrief. Aleksander responds that the workshop is still in its organisational phase, and they are looking for ways to make it efficient for all stakeholders. Given the short timing between the launch of the public consultation and effectively publishing ACER draft proposals, stakeholders are not expected to review all the documents in such short time by 19 July. The intention of the workshop is to familiarise stakeholders with the main policy areas and to guide them at the beginning of the public consultation period. Georgios Antonopoulos (ACER) adds that the stakeholders will have 10 weeks to react in written form on the amendment proposal. All the reactions will be published on the website.

Adrian Gonzalez (ENTSO-E) asks if the documents expected to be published on the 17 July will strictly be the RfG and DCC draft recommendations, or if they will also include System Operations guidelines, and consequential amendments and merging from the changes in RfG and DCC.

Aleksander Glapiak (ACER) replies that the current plan is to only publish NC RfG and NC DC, and evaluate the stakeholders' reactions to those proposed amendments, then to further look for some consequential changes and other pieces of regulation.

Florentien Benedict (CEDEC) asks if there is a template to fill-in regarding the consultation period. Aleksander responds that they are looking into it. A template can be expected when the public consultation is launched.

Georgios Antonopoulos (ACER) presents the indicative draft proposals for NC RfG amendment.

Freddy Alcazar (EUGINE) asks if the requirement to cease active power is no longer required for type A. Georgios replies that the whole requirement to cease active power within 5 seconds has been completely replaced.

Erik Dekinderen (VGBE) comments that the derogation procedure that was proposed in the past had 2 disadvantages: it applies for only a few years, and it must be granted per country. He asks if it is identical as in the past, or if in the new version of the RfG Code, the derogation can be proposed for 30 years at European level. Aleksander replies that as of now, there was no such edition about amendments to the derogation rules, they are only looking at how to possibly streamline these procedures. No relevant changes were suggested by NRAs or relevant stakeholders. The version that will be publicly consulted includes the RfG 1.0 derogation procedure.

Adrian Gonzalez (ENTSO-E) shares concerns about the reduction of the current requirements for SPGMs. There are concerns regarding risks of blackouts triggered by system splits because a withstand capability of only 1Hz/s over a period of 0.5 seconds goes against the current implementation of the RfG in more than 15 Member States. Today, there are 2Hz/s over a period of 0.5 seconds. Therefore, in practice, it implies that the future generators are being asked mild requirements in comparison to the ones they must comply with nowadays. He raises awareness on the issue concerning the requirements. Several arguments have been identified from different EUTurbines presentations. He displays arguments from around 10 years ago, showing that the position from EUTurbines worked well with 2Hz/s. It is not clear why, for new units that will apply 4 to 5 years from today, there should be a fall back to a mild requirement in comparison with what is currently in place. Georgios Antonopoulos (ACER) responds that their understanding was based on the fact that there is a practical technical limitation on certain types of SPGM, above certain threshold to withstand beyond 2Hz/s requirement, which is why the fall-back option was proposed because an agreed proposal between ENTSO-E and relevant stakeholders has not been received. In the assumption that there are technical limitations to these units, ACER would include certain points within the legal text to clarify and make sure that these units can withstand what is technically possible. If there are no technical limitations and if it's agreed between the relevant stakeholders and ENTSO-E, then the current rate of change of frequency value will be used.

Luca Guenzi (EUTurbine - Solar Turbine) reacts to Adrian's presentation. The 1Hz/s is the target. There are concerns related to frequency limits, it's another topic to discuss and to not neglect. The present frequency limitation is not expected to be exceeded, as the expectation is to keep the quality of the grid under control.

Mario Ndreko (ENTSO-E) comments that it would be good to stick to the inertia constant threshold. There was hope to get value on that from the industry, but an option could be that a constant threshold, for example for the type D is defined by the relevant TSO on national level.

Bernhard Schowe-von der Brelie (EFAC) asks about the timeline. Aleksander responds that the timeline was presented for the public workshop on Grid forming. For all the requirements, the time periods would be the same as they were in RfG 1.0, but for Grid forming capabilities, they are also looking into the fact that in this iteration of RfG, there are less requirements to be specified further by the TSOs, this may also affect the timeline provided in Article 7, otherwise, for the grandfathering, it will remain the same as for RfG 1.0.

Mario Ndreko (ENTSO-E) mentions two questions on the grid forming for the switch on/off. First question is regarding how long the switch on/off can stay, for example for a type B, which would be mandatory. The second question is about whether the DSOs will be able to monitor all PPMs in the grid which are on or off. The questions are to be addressed later.

ACTION: ACER to ask the European Commission and to update GC ESC on the status of initiating the HVDC amendment process.

## 4. *CharIn views on ACER's proposal for electromobility*

Julian Treichel (CharIN) presents the slides (available here).

Gunnar Kaestle (COGEN) reacts to the presentation and refers to page 11. He asks if the general setting fits all, then why that kind of communication is needed as there is no need for it.

Bernhard Schowe-von der Brelie (EFAC) comments that for FGW in Germany, some work has been done several years ago on the certification of charging stations, and even though it was not pushed forward, it is a point that can be worked on. He does not see any formal constrains regarding charging stations for single electrical vehicles with onboard charging.

Erik Dekinderen (VGBE) refers to the graph and asks if it's the intention of ACER to make a distinction regarding whether the storage devices are stationary or if they also include V2G vehicles. Georgios Antonopoulos (ACER) responds that electromobility is captured in a different article. For instance, the storage modules are different than electromobility. Erik asks if the PPMs include electric vehicles. Georgios responds that an electricity storage module includes EVs but for EVs below 1 MW the requirements are provided in different articles.

## 5. *ENTSO-E & EU DSO Entity: Electromobility and harmonisation: An alternative amendment proposal*

Adrian Gonzalez (ENTSO-E) presents the slides (available here).

Georgios Antonopoulos (ACER) comments that the harmonization of type A requirements is supported, although ideally, there should be a harmonisation of the threshold between A and B to get the full benefits to allow all Member States for type A to have the same requirements and the same threshold, and therefore harmonise the type A devices. It would be good to see the benefits of having one against the other in case of objections from the Member states to fix the threshold between A and B. He also points out the differentiation between the vehicle and the charging column. It is understood that the charging column is fixed and connected to a specific place in the grid, but there is also a big difference between the charging column and another PPM which is often missing the source. It seems more appropriate to combine the vehicle and the charging point together as a single type to have requirements for to avoid additional requirements to the charging point.

Marco Pasquadibisceglie (Arera) comments that although in principle, he does not observe any criticalities in harmonised type A requirements, as this could be useful to have a wider mass market in terms of manufacturers, he shares some concerns on the threshold between A and B types. He comments that CENELEC suggested keeping grid forming out of low voltages, therefore the threshold of point 4 (referring to the slides) could be a good solution.

*Lunch break*

## 6. *EU Turbines position on RoCoF*

Luca Guenzi (EUTurbine - Solar Turbine) presents the slides (available here)

Eric Dekinderen (VGBE) asks for clarification on several questions: a paper that ENTSO-E issued in 2021; limitation of high RoCoF LFDD; curves of RoCoF; regarding measures to limit the RoCoF. Mario Ndreko (ENTSO-E) replies that (1) ENTSO-E paper was about the centre of inertia that cannot be managed more than 1Hz/s. (2) Limitation of high RoCoF LFDD has limitation 3-4 Hz/s that the frequency should be measured, the windows from the point when frequency can be measured until the trip should be reduced as much as possible. (3) Regarding measures to limit the RoCoF, the size of counter measure to be taken to keep RoCoF depends, first on the immunity of the units and then the System Operation guideline should solve this problem. Eric mentions that more studies and simulations should be done.

Luca Guenzi (EUTurbine - Solar Turbine) explains the proposal by ACER in the context of the SO ESC to create a dedicated Expert Group (with terms of reference to be developed) that would cover both SO and Grid Connection stakeholders to find out how to keep the situation under control and to seek stakeholders' involvement in a macro-economic study provided by TSOs for adapting the overall system design to a net zero emissions power system. Mario Ndreko (ENTSO-E) asks members to focus on the legal text.

Herve Biellmann (GE Vernova) refers to slide 12 and gives some background information regarding the process of the proposal. He asks if it is clearly demonstrated that above 1Hz/s, the grid will not collapse. This topic is to be discussed further.

## 7. *ENTSO-E: Publication of updated IGDs on Compliance Verification and Publication of Implementation Monitoring Platform for the Connection Network Codes*

Sergio Martinez Villanueva (ENTSO-E) presents the slides (available here)

Luca Guenzi (EUTurbine - Solar Turbine) asks if the work done by the EG HCF was also considered regarding the simulation because the HCF was also in line with the part related to the compliance. Sergio responds that due to the timeline of the publication of the guidelines being prior to EG HCF publication, it could not be considered. The consultation period was earlier than the publication of the final report of HCF.

Assiet Aren (EUGINE) comments on an issue related to the compliance regarding the simulation software. There is no control over the software itself. There needs to be a way to push simulation software companies to develop their software that allows to transfer their model from one to another software and have guarantees that in case there are software update revisions, the software simulations will still be reliable. Sergio responds that it is an important topic, but it's difficult to harmonise software simulation tools in Europe. It is out of the scope of the IDG to request the validation of the software.

Mario Ndreko (ENTSO-E) comments that for compliance, and interaction studies, the process usually is at national level, even specific projects from the TSOs.

It is suggested to organise a short workshop regarding simulation models and compliance, including with delegates from companies and ask for their opinion regarding the translation software, as one workshop might clarify most of the questions. The Chair thanks for suggestions and that this is to be discussed further.

The stakeholders and ACER provide positive feedback on Implementation Monitoring Platform version 2.

## 8. CENLEC

Alberto Cerretti (CENELEC) presents the slides (available here)

Mario Ndreko (ENTSO-E) asks if the work will be done on PPMs grid forming. Alberto confirms that it is indeed the case, and adds that 50549-10 is being closed, with comments left from Germany about variance and family grouping. The results and outcomes of the HCF working group will be considered for this activity.

Gunnar Kaestle (COGEN) asks to clarify whether the final vote of the amendment of 50549-1 and 2 will be skipped if no large feedback is given. Alberto agrees that it depends on the numbers and on the quality of the comments.

## 9. AOB

The Chair asks for any additional topics to be covered under AOB.

Freddy Alcazar (EUGINE) proposes to organise a meeting with ENTSO-E and to have ACER as an observer. Two meetings are proposed: one online meeting on 26 or 27 June for initial clarifications, and a second hybrid meeting on 12 or 13 July. Sergio Martinez Villanueva (ENTSO-E) responds that agendas will be aligned to organise the meetings accordingly, before the second half of July. The Chair adds that ACER will also check internally for a date and coordinate accordingly. A written proposal will be sent.

## 10. Follow-up actions:

1. ACER to ask the European Commission and to update GC ESC on the status of initiating the HVDC amendment process.
2. ENTSO-E and EG HCF to organize two meetings with ACER (as observer) to review the legal text proposal of EG HCF and to reach an alignment.