

Report of the 68th session
Electric Vehicles and the Environment Informal Working Group (EVE IWG)

Location: Virtual – Webex
Date: February 28 – 29, 2024
Time: 05:30 – 08:00 EST

Chairs: Mr. Michael Olechiw (United States of America)
Ms. Elena Paffumi (European Commission)

Vice-Chairs: Ms. Chen Chunmei (China)
Mr. Nobunori Okui (Japan)

Secretariat: Mr. Leeson Guay (Canada)

Day 1 – February 28, 2024, 05:30 EST

1. Introduction, review of agenda, and meeting recap

Documentation

- EVE-67-22e
- EVE-68-01e

Context

The EVE IWG co-chairs addressed members and welcomed everyone to the virtual meeting.

The co-chairs presented the meeting agenda to EVE IWG members, which can be seen below. The agenda was reviewed and adopted by the EVE IWG prior to beginning discussions.

Day 1 – February 28, 2024, 05:30 EST

- Introduction, review of agenda, meeting recap
- HDV GTR – Review of open items
- HDV GTR – OICA key priorities
- HDV GTR – JAMA boundary condition test results and position
- HDV GTR – Japan positions and comments on draft text
- HDV GTR – Test procedure steps and boundary conditions
- HDV GTR – Review of draft text
- HDV GTR – Metric and minimum performance requirements

Day 2 – February 29, 2024, 05:30 EST

- Introduction, review of agenda
- HDV GTR – Metric and minimum performance requirements
- UN GTR 22 – Discussion on prioritization of future topics
- UN GTR 21 – Discussion on prioritization of future topics
- Future planning and logistics

The EVE IWG secretary briefly reviewed the *Report of the 67th EVE IWG session*, highlighting action items and key decisions from the discussions, held in-person in Geneva, Switzerland, on January 09, 2024.

Discussion

The Japanese delegation requested clarification of the agenda and whether item four was the sole position of the Japanese Automobile Manufacturer's Association (JAMA) and not the Organisation Internationale des Constructeurs d'Automobiles (OICA). JAMA responded and indicated that their presentation contains results and some additional questions they wish to pose and that it is the sole position of JAMA.

Action Items

Decisions

2. HDV GTR – Review of open items

Documentation

- EVE-68-03e
- EVE-68-10e

Context

This item was set with the objective of continuing discussions on the draft United Nations Global Technical Regulation (UN GTR) on battery performance and durability of electrified heavy-duty vehicles (eHDV).

The drafting coordinator offered a quick introductory presentation on where everything stands with regards to the draft text and topics that remain outstanding.

Discussion

The drafting coordinator encouraged all members to provide feedback to her on these topics going forward prior to the Korea meeting so that they may be incorporated into the latest draft text and ready for discussion at the next EVE IWG session.

OICA expressed that as part of the list of open items to be discussed, they wish to have energy throughput designated as well as virtual distance discussions, as needed. OICA commented that they wish to organize a dedicated workshop to discuss the more technical details of items that appear on

the list. The drafting coordinator acknowledged the comment and offered to update the document after the meeting.

Action items

- Drafting coordinator to modify document EVE-68-10e to include language surrounding energy throughput and virtual mileage, as needed.
- Secretariat to post the updated document on the EVE wiki page when available.

Decisions

3. HDV GTR – OICA key priorities

Documentation

- EVE-68-07e

Context

OICA gave a presentation outlining their positions on several key priority topics while highlighting:

- In favour of referring to usable battery capacity (UBC) charged as indicated in their analysis
- The incorporation of a full cycle equivalent (FCE) metric for minimum performance requirement (MPR) assessment

OICA requested that a two-day technical workshop be organized after the 69th EVE IWG session in Korea to finalize these topics.

Discussion

The co-chairs remarked that this proposal was rather significant and creates some confusion as it was the understanding of the EVE IWG that these topics would be addressed within the context of the regular EVE IWG sessions. It is unclear how this proposed workshop would mesh with the regular working group meetings. The co-chairs stated that they feel the information presented in this proposal is leading in a different direction from where the EVE IWG is moving with the current draft of the eHDV UN GTR. We are struggling to relate the two different directions and looking at how they may be resolved within the context of the regular EVE IWG sessions. OICA stated that when they look at the outstanding issues, there appears to be a high degree of complexity and a need for a more intense exchange to express the drawbacks to the industry. OICA feels that a face-to-face exchange would be beneficial so that the parties can interact, speak, react, and express thoughts illustratively through diagrams to better communicate ideas. The co-chairs expressed that they hear what is being said and understand the point trying to be made, but requested clarification on why this cannot be done at the upcoming 69th EVE IWG session in Korea. OICA stated that this is a good point, and this idea was already considered but the Korea agenda is full and OICA would require at least a half-day of discussion and would need more time to come well prepared. OICA does not feel that Korea is realistic, but a preliminary discussion could be arranged in Korea if this would serve as a good first step in the process. OICA continued stating that the discussions surrounding eHDV are intense to the point that they do not feel it would be fair to their light-duty vehicle (LDV) colleagues to occupy the majority of the discussion time. The co-chairs reiterated that their confusion lies with

the disagreement in the direction of the UN GTR between the contracting parties and OICA.

Evidently, it does not make sense to continue work on the eHDV UN GTR if there is disagreement, therefore, this issue needs to be resolved here before we can move forward.

The Japanese delegation communicated that they share the same views as the co-chairs. They also recalled previously set timelines where the intention was to submit an informal draft of the eHDV UN GTR to the June session of the Working Party on Pollution and Energy (GRPE). However, this session has since been pushed back until October, offering more flexibility. The Japanese delegation highlighted that although the timelines are tight, the OICA presentation does not offer any new information and it appears to be slowing group progress towards the EVE IWG's set timelines. OICA stated that they fully understand the Japanese delegation's perspective and OICA is not intending to jeopardize timelines. OICA mentioned that if developing regulations with a type-approval framework, there is a requirement to know what vehicles will be in the market, while at the same time opening an umbrella to vehicles that will need to have the same battery capacity. Otherwise there will be automatic failures in the testing protocol. OICA continued to mention that there also needs to be a discussion on UBC because it is something of great importance and perhaps this can be done through a separate breakout session. The Japanese delegation expressed that they do not really see the differences between eHDV and LDV at this point, however, if there are unique situations within eHDV, then they can certainly be considered. The Japanese delegation further asked that if OICA feels that the approach being taken does not suit eHDV, then they should provide a justification and alternative solution with supporting evidence.

OICA expressed that the eHDV UN GTR is directly related to the Euro 7 proposal and that this very detailed discussion needs to happen and perhaps the European Commission can join to communicate with us further. OICA commended the efforts being made to push through the draft UN GTR and mentioned that we are just starting to see production of electric vehicles on the mass market and particular attention needs to be paid to the technicalities and considerations of future technologies ensuring the regulations remain as neutral as possible. We need to have these vehicles on the market but also ensure that consumers want to use these vehicles. Ultimately, OICA is looking to find common ground and ensure that the eHDV UN GTR remains as open as possible. The Swedish delegation stated that they feel there have been valid points put forth by OICA and noted that the light-duty and heavy-duty vehicle sectors are completely different, as are the vehicle owners, where heavy-duty is typically used for commercial applications. They feel that it is important to have these discussions in the development of the family concept. Whether these discussions take place within the EVE IWG sessions or through a workshop, it makes no difference to the Swedish delegation. The co-chairs expressed that many of the items brought forward in this OICA presentation are not new and so the co-chairs requested clarification on whether OICA feels they are being heard and whether the EVE IWG needs to do more to listen further on these presented details. Again, these items are not new, and we have tried to address them already through the session discussions and drafting process. The co-chairs added that the outstanding items in the presented list are still open for discussion. Some items that have been decided upon, such as the testing procedures, were discussed in a breakout session and ultimately, options were brought back to the main EVE IWG sessions for consensus. The European Commission (EC) expressed that there are several items that need to be taken care of within this UN GTR and minding the need to transpose these requirements to a type approval format. I think that the comments are relevant, we understand that the industry is

nervous about the amount of work that is needed, and we understand their concerns. In this UN GTR, we need to decide on a family definition and if this cannot be agreed upon, then maybe we need to leave the definitions for the local regions to decide. We have found a way to do type approvals with Euro 6 and the emissions regulations so we will try to apply the same methodology for electrified vehicles. The EC also feels that the EVE IWG is the appropriate group to discuss these matters and we need to use the time we have to make these decisions and have these discussions. If OICA has specific issues, the EC agrees with Japan in that they should bring them forward and present possible solutions so that we can have the necessary discussions. These should be coming from industry, and we will do our best to accommodate them.

OICA stated that they would really like to be aligned with the proposed timelines and address the challenging open topics. OICA reiterated that their proposal would be to have a deep dive session, in addition to delivering the file on time. They do feel like they are being heard, so there is no concern there. The co-chairs communicated that as we entered the process, we recognize that LDV and eHDV are different; eHDV is not a homogenous fleet and there is a variety of products. Before turning to a workshop, we feel that we need to bring these topics to the next EVE IWG session in Korea and if there are items that you feel need to be discussed beyond the capacity of the session, then we can have some sort of workshop. OICA stated that they feel the co-chairs are correct in their position and that these items should be brought forward to facilitate these constructive discussions and this can start with the Korea session.

Action items

- The EVE IWG leadership team to ensure that the nuances of the discussions that have taken place are accurately captured in the meeting report.

Decisions

4. HDV GTR – JAMA boundary condition test results and position

Documentation

- EVE-68-08e
- EVE-68-09e

Context

JAMA presented two documents, with the first outlining their results on boundary conditions testing for eHDV battery deterioration. The presentation concluded that:

- The battery temperature during normal operation and the maximum allowable deviation needs to be agreed upon between manufacturers.
- The manufacturer should set the maximum current rate (c-rate) that will not result in damage to the customer's battery and set the current and allowable tolerance accordingly.
- Multiple drivers should be prepared, changed, and returned to main measurement within 5 minutes or 10 minutes at the maximum.

The second presentation was a study on the significance of the correlation between state of certified energy (SOCE) and mileage or energy consumption of eHDVs from manufacturer market data. This

presentation proposed that the MPR of the eHDV UN GTR should be based on a year and full-cycle equivalent derived from battery energy or capacity throughput.

Discussion

The Japanese delegation expressed some confusion about the proposals of the first presentation and results coming from the presentation. They requested clarification on how you can set a c-rate that would protect a customer's vehicle. They also suggested that the outcome and proposal are not necessarily clear and in the future it would be advantageous to make it clear what you are looking to pursue with this testing. JAMA thanked the Japanese delegation for their feedback and indicated that they will revise the delivery of the material and bring it back for further discussions. The drafting coordinator stated that they will look to take some of the methods used to address the boundary conditions of the test offered in the presentation. The drafting coordinator also communicated that the temperature is not something that can be controlled while driving on-road so this can be discussed further to determine whether conditions need to be set to account for this.

OICA expressed that this presentation offers an example of why they have put forward the request to facilitate breakout sessions to try and manage these explorations external to the arranged meeting time. The drafting coordinator offered that the information presented was useful, the issues can be tackled, and the results can act as a reference in future discussions.

The Japanese delegation pointed out that in the second presentation there appears to be new information presented and at this stage it becomes difficult for the EVE IWG to change the scope of the eHDV UN GTR. Japan stated that based on this new information they will look to provide concrete ideas at 69th EVE IWG session. The drafting coordinator highlighted the new information surrounding battery replacement within the useful life of the vehicle and that this needs to be considered further because it is also excluded from the scope of the eHDV UN GTR at this time, but this can be considered further at a later time.

Action items

Decisions

5. HDV GTR – Japan positions and comments on draft text

Documentation

- EVE-68-05e
- EVE-68-06e

Context

The Japanese delegation gave a presentation on their current positions on various outstanding topics of the draft eHDV UN GTR, in addition to justifications for each of their stances and draft text.

Discussion

The drafting coordinator explained that the Japanese delegation submitted comments and draft text which have been incorporated into the latest version of the eHDV UN GTR text for everyone to review.

Action items

Decisions

6. HDV GTR – Test procedure steps and boundary conditions

Documentation

- EVE-68-04e

Context

The drafting coordinator presented a document highlighting some of the outstanding issues and questions for the development of the eHDV UN GTR. The drafting coordinator briefly stepped through each topic, explaining the status, proposals made on the various topics, and some high-level questions for consideration.

The drafting coordinator concluded by requesting all participants to please provide feedback on the draft text in advance of the 69th EVE IWG session in Korea and requested that participants come prepared so that decisions can be made during the next meeting.

Discussion

The Japanese delegation commented on the topic of temperature boundary conditions during testing, stating that currently the text outlines a temperature of 23 or 25 degrees Celsius during the charging event. However, they feel that this is appropriate, and would not want to expand this temperature range further. Regarding the soak conditions, the Japanese delegation is flexible and happy to keep them as they are and with respect to the test gradients. They further stated that the remainder of items under consideration for the temperature boundary conditions will need to be discussed internally.

The American delegation requested clarification on where the 23-degree Celsius requirement for the boundary conditions comes from, since most testing is done at 25 degrees Celsius. The drafting coordinator explained that this is a value that has been set in UN GTR No.15 and so we need to decide which value to use: 23 or 25 degrees Celsius. The American delegation communicated that in a controlled environment, plus/minus 5 degrees Celsius makes sense with either a value of 23 or 25 degrees Celsius, but they would have a preference to use 25 degrees Celsius as that is what they currently use for their testing. If the charging can be controlled, then the on-road testing can be left with a wider margin. When charging in a controlled environment we can start with a warm battery. These eHDV batteries have a lot of mass and will require significant time for the ambient temperature to impact the battery temperature for warm up. Having a correction factor on these temperature values makes the American delegation a little nervous and there would need to be proper justification for a correction. The EC commented that if the battery temperature has stabilized, then the effect should be independent of the ambient temperature. The EC also expressed that it is unclear whether a lower ambient temperature would impact the battery in any way during

testing since during operation the system heats up. It would be valuable to have some further input on this starting temperature and how the actual state of charge varies with testing temperatures.

OICA requested clarification on the reasoning behind a temperature range existing for the soak and preconditioning of a battery. The drafting coordinator clarified that the preconditioning is important to stabilize the battery for situations when it is difficult to control the battery temperature, for example, when conducting outdoor testing in cold weather climates. These sorts of cold climates and non-ideal conditions could cause a battery to go into protection, impacting testing and performance. OICA explained that they have two types of systems, active and passive thermal management for vehicle batteries. Based on the explanation they feel that passive thermal management would be appropriate for these conditions, however, with active thermal management, manufacturers should be able to precondition their batteries to whatever they feel is most appropriate for their system. In general, they feel that batteries with active thermal management possess performance characteristics that are more independent of ambient temperatures.

OICA posed the question of whether it would be possible to allow prewarming of the vehicle with external chargers. The drafting coordinator communicated that all of these comments are being noted and will be incorporated into the draft text and kept available for future discussion. The Japanese delegation added that these types of decisions take time to discuss and arrive at a conclusion. They suggested that members have these discussions internally and come to the next meeting with a decision. The drafting coordinator was in agreement with this approach.

The drafting coordinator highlighted, regarding test methods 1a and 1b, that OICA had proposed to merge the two test methods. The Japanese delegation indicated that it is not possible to drive on the road in Japan without a registration and as a result the only possible method of these options would be method 1a. OICA stated that they need to discuss this further to ensure all of their members are aligned with the approach.

OICA commented that based on the proceedings and what has occurred, it illustrates that there is still a lot to discuss, and breakout sessions are needed to resolve some of these finer details. OICA explained that they would discuss all of these outstanding items internally and come prepared with responses to the next meeting.

The co-chairs expressed that it was a good idea to have gone through all of these outstanding topics and reiterated that having seen this presentation and knowing what open issues require decision, let us collectively take these back and discuss internally in preparation for decisions on these topics at the 69th EVE IWG session in Korea.

Action items

- EVE IWG members to provide feedback to the drafting coordinator on the eHDV GTR draft text and outstanding issues, in advance of the 69th EVE IWG session.
- EVE IWG members to discuss topics internally and come to Korea prepared to make decisions on the various topics.

Decisions

7. HDV GTR – Review of draft text

Documentation

- EVE-68-02e

Context

This item topic was not specifically shown during the meeting, but documents remain posted as reference to the discussions.

Discussion

Action items

Decisions

8. HDV GTR – Metric and minimum performance requirements

Documentation

- EVE-68-11e

Context

Due to time constraints, this item was discussed only on day 2 of the 68th EVE IWG session.

Discussion

Action items

Decisions

Day 2 – February 29, 2024, 05:30 EST

1. Introduction, review of agenda

Documentation

- EVE-68-01e

Context

The EVE IWG co-chairs addressed members and welcomed everyone to the virtual meeting.

The co-chairs presented the meeting agenda to EVE IWG members. The agenda was reviewed and adopted by the EVE IWG prior to beginning discussions.

Discussion

The co-chairs suggested that for day 2, the EVE IWG should continue to move forward on the agenda topics and begin by discussing eHDV UN GTR metrics and MPRs, as originally scheduled.

The secretary of GRPE suggested additional topics for discussion towards the end of the meeting regarding the work of the GRVA and specifically items surrounding electro-mechanical braking and similar systems.

Action items

Decisions

2. HDV GTR – Metric and minimum performance requirements

Documentation

- EVE-68-11e

Context

The drafting coordinator began by presenting a document outlining a preliminary simulation of the Transport Technology and Mobility Assessment (TEMA) model with given inputs and assumptions, resulting in estimated MPR outputs for energy-capacity fade requirements in eHDVs.

Discussion

The Japanese delegation commented that they found the results rather interesting, especially the portion concerning the regional comparison with and without power takeoff (PTO). Industry had expressed concern with the PTO impact on battery durability, however, according to the results, there seems to be a lower impact than initially believed. The drafting coordinator stated that the TEMA model may not reflect the battery usage in the same way and so comments on this specifically would be appreciated to adjust the model.

The co-chairs reminded everyone that when first developing the TEMA model there were limited amounts of battery chemistries, so it was asked if this latest simulation includes updated battery chemistries to reflect the current and known future market. The drafting coordinator comments that there are now approximately 14 additional chemistries present in this version of the TEMA model but there are certainly more chemistries in the market. The co-chairs stated that if anyone has expertise in battery technology, please inform the drafting coordinator so that the TEMA model can be further refined to offer a more accurate estimate.

The co-chairs stated that the presentation offered some information on battery architectures and size. Previously there was concern raised by OICA regarding appropriate size and architectures and how the regulations could impact the battery characteristics. To inform battery aging, the drafting coordinator stated that in the presentation, it illustrates how the battery cells are connected inside the pack and offers values for the number of cells available on the market and other information freely available in literature. The drafting coordinator indicated that in their study they do not look at number of packs onboard, just the battery aging and energy capacity. The drafting coordinator also raised that there were some concerns regarding vehicles operating mostly in a stationary configuration, but the analysis shows that it may not be an issue. Regardless, further work needs to be done to verify this. OICA commented that they feel battery fade is a very complex issue and there are many factors at play. OICA expressed that the work done has been good, however, they have big concerns about using a simulation to determine MPRs because it is much more complicated than what a simulation can reproduce. OICA pointed out that payload values in the simulations are not necessarily reflective of the reality that payload values often exceed 50 % under normal circumstances and are seen as very common with the majority having much larger payloads than this. The drafting coordinator thanked OICA for the comments and explained that the values being used are taken directly from the regulation itself. The regulation also provides weighting factors for mixing mission profiles for a given vehicle group, but this has not yet been implemented into the TEMA model, to not lose the overview related to the battery ageing versus single mission profile.

OICA expressed that when calculating carbon dioxide emissions using a 0 % and 100 % metric to get a 50 % average, this method is logical, but it does not make sense in the context of batteries because of the complexity. OICA also asked if the intention of the eHDV UN GTR is to have complex metrics to represent battery characteristics and vehicle classes. The drafting coordinator clarified that the EVE IWG is looking to categorize vehicles by the United Nations categories, crossing the different regional vehicle classifications.

OICA expressed that they would strongly recommend a monitoring phase so that we are able to set a generous limit to start, but overall, we still would like to emphasize our concern with battery complexity. The drafting coordinator requested that OICA please offer comments and feedback so that the TEMA model can be made more accurate and robust.

The American delegation requested clarification on whether the results of the simulation could be used to develop a correlation among mileage and energy throughput for MPRs or what a correlation result would look like. The drafting coordinator indicated that it is challenging to find a common conversion factor between mileage and energy throughput and that an average value, of the energy consumption as a conversion factor, approach may not be the clearest method. Perhaps it is possible to offer a generous MPR and allow regions to set their energy throughput, mileage, and vehicle age

separately. Ultimately, the drafting coordinator is unsure on how to propose a methodology currently, and there needs to be a way of not penalizing any specific vehicle or class.

JAMA requested clarification on whether the 15-year simulation inputs are based on the Euro 7 requirements. The drafting coordinator clarified that yes, they were taken from the Euro 7 proposal and can be seen on the Euro 7 slide of the presentation. The American delegation requested clarification on whether the 15 years was a requirement for all vehicles and not yet represented as a percentile. The drafting coordinator confirmed that, yes, this is currently a requirement for all vehicles and has not yet been represented as a percentile. The EC commented that they have been pushing the Joint Research Centre (JRC) to simulate and produce these results so that in the Euro 7 regulation we can reference these values. They mentioned that it is now their legal requirement to set these performance values for Euro 7 going forward and this is what they are looking to include in the regulation in the future. The EC further commented that the idea is to set targets for a very broad range of vehicles and not necessarily be as accurate but put forward a minimum value that can be used. This value needs to be set. The EC asked that if there are any comments, please submit them because they will be using this for setting Euro 7 values. It is very important for the EC to have a clear perspective on how to move forward with these. OICA requested that the drafting coordinator provide OICA with the boundary conditions of the TEMA model that led to these conclusions so that they may assess it internally. OICA also suggested to the EC that when setting targets, it is important to include a monitoring phase to inform the regulations and see the vehicles because we do not have any serious data on these vehicles to date.

The EC commented that when we are setting a requirement for heavy-duty trucks, 15 years and 700,000 km would be the lower limit and if we allow the implementation of something like battery swapping it will alter our approach to the regulations. In the current development of this eHDV UN GTR, we have excluded battery pack exchanging, so we are not going along this path as it is out of scope. If this is something that is supported by the group, we can revisit this discussion but not at this time. Legally, battery exchanging would need to be explored through the implementing Acts and not contradictory to our work here. The US delegation commented that from their perspective, the durability and economic requirements of a regulation go hand-in-hand. If we anticipate that batteries will require replacement at some point during the useful life, then it would be an economic consideration when establishing the revised standards. In LDV, we do not consider battery exchanges because we feel that the battery needs to last the life of the vehicle. OICA stated that for LDV it makes sense but for eHDV there is a different mission profile and for durability they need a large capacity which impacts space and weight. This needs to be considered throughout the life of the vehicle. If the manufacturer committed to 8-year durability for example, we would not be able to guarantee that the current requirements will be met without exchanging the batteries. OICA feels that we need to have the battery exchange in the regulation in a flexible way. OICA asked if the EC could check internally to determine whether battery swapping is a possibility. OICA stated that this is the first time we will set regulations before the product is really in use, and we have no data. A monitoring phase is needed to set proper and accurate MPRs. It is very important to OICA. The co-chairs expressed that this presents itself as an opportunity to design these emerging products in a durable way which maximizes the longevity and efficiency of these vehicles. JAMA commented that the scope of UN GTR No. 22 was for in-vehicle battery durability, for the whole vehicle. We believe the scope is similar for eHDV. The co-chairs thanked JAMA and communicated that yes this was done

for LDV and for eHDV the distinction is scope is the same. OICA commented that for LDV, the battery durability is the in-vehicle durability but for LDV there is also only one battery, which makes sense for their use cases. The difference is that for eHDV there can be multiple packs on the vehicle, and these are much bigger at over 1000 kilograms. It is up to the customer to decide what they want in their vehicles. We feel that the eHDV scope could force consumers to purchase a vehicle and battery that are much larger than their needs require. We feel that this needs to be explored further.

The drafting coordinator thanked everyone again for their comments and requested that comments please be sent for consideration, especially information on PTO and battery chemistries, so that these can be refined in the TEMA model.

Action items

- EVE IWG members to provide feedback and comments to the drafting coordinator regarding topics to be considered for the TEMA model, including but not limited to, PTO and battery chemistries.

Decisions

3. UN GTR 22 – Discussion on prioritization of future topics

Documentation

Context

This item was set with the objective of discussing the next phase of UN GTR No.22.

Discussion

The drafting coordinator stated that they wanted to take some time to highlight comments received from the Euro 7 work which has not yet been included within UN GTR No.22. The drafting coordinator began by mentioning the Part C family and how this topic has not yet been discussed in depth during the sessions. It was suggested that perhaps this is something that can be discussed at the next opportunity. OICA commented that they have been discussing the Part C family and will continue to discuss internally and bring a proposal to Korea.

The drafting coordinator proceeded to point out that in the UN GTR No.22 working document, there were some comments included on the state of certified energy (SOCE) for future discussion accompanied by some minor grammatical edits. OICA commented that from their perspective the resolution of the SOCE will likely appear as a percentage for the customer. The resolution itself should be the same as the official indicator and so we can show both of them in the same way through the same metric.

The drafting coordinator finished by raising the topic of not off-vehicle charging hybrid electric vehicles (NOVC-HEV). This class of vehicle has not yet been included in the UN GTR No.22, but the EVE IWG would like to gauge interest in addressing this topic. OICA expressed that NOVC-HEVs were excluded from the regulation due to normal test procedure limitations. We need to ask whether there is any need from a market perspective, as there are still some of these on the road. This may be worth considering prior to moving forward on this topic.

The drafting coordinator suggested discussing these topics internally and coming back to them in Korea.

Action items

- OICA to discuss Part C family internally and present their proposal in Korea.
- EVE IWG members to discuss internally the topics of NOVC-HEV, Part C family and SOCE to bring forward a position on each in Korea.

Decisions

4. UN GTR 21 – Discussion on prioritization of future topics

Documentation

Context

This item was set with the objective of discussing the next phase of UN GTR No.21.

Discussion

The drafting coordinator acknowledged the workshop that will be taking place at the GRPE level on May 23, 2024, in Geneva regarding the future direction of power determination and encouraged everyone to participate. The drafting coordinator proceeded to highlight possible future topics, which have been outlined in the latest Terms of Reference document, including system bench testing, eHDV power determination, highly integrated systems, and a candidate method. It is unclear whether we intend to look into a candidate method further, but we can keep it on the list for now. OICA echoed the same sentiment and encouraged participation in the workshop.

OICA requested clarification on whether there was intention to transpose the UN GTR No.21 into a United Nations Regulation (UNR). The co-chairs expressed that they are not aware of any efforts for this transposition at this time. The secretary for GRPE also stated that they are not aware of any efforts either, but this regulation could be used at the regional levels. This topic will be discussed in the workshop.

The secretary for GRPE requested the point of contact for OICA. OICA communicated that Norbert Klein will be the point of contact for the workshop.

Action items

- EVE IWG members to participate in the upcoming GRPE workshops on May 23, 2024.

Decisions

5. Future planning and logistics

Documentation

Context

This item was set with the objective of discussing future meeting plans and logistics.

Discussion

The secretary reminded the EVE IWG to ensure that they have reserved and designated in-person participation to the EVE IWG secretariat in advance of the 69th EVE IWG session in Korea. The Korean delegation also communicated that ???

The Japanese delegation offered further insights into their planned in-person meeting in the fall of 2024. The Japanese delegation stated that the EVE IWG session would take place on September 18 – 19, 2024 with a carbon neutrality conference taking place on the September 20, 2024. Further information will be provided regarding accommodation and the conference details at the 69th EVE IWG session.

The secretary for the GRPE explained that in the Working Party on Automated/Autonomous Connected Vehicles (GRVA), they are working on electro-mechanical braking and integrating that into the battery, in addition to the steering system. There is a special interest in the group on these topics and a lot of discussion regarding durability and power fade of these systems within the vehicle. The GRVA wants to ensure that a vehicle can always stop and be steered using the traction battery and so it might be beneficial to offer them a presentation on UN GTR No.22 to ensure they are aware of what has been done, the requirements of the regulation, and whether possible synergies exist for their development. The co-chairs mentioned that within the EVE IWG there are some experts on regenerative braking, so this may be helpful for the GRVA's purposes. The chair of the GRPE commented that they feel this messaging between the groups is good and that it should be expanded to include trailers with energy storage, vehicle traction, assisted propulsion and other characteristics. The co-chairs of the EVE IWG explained that they are unsure whether these trailers would fall within the scope of UN GTR No.22 at this time. The Swedish delegation commented that they feel this electro-mechanical braking, steering and trailer considerations are an important topic and that this collaboration is needed to understand the need going forward. The EVE IWG co-chairs requested clarification on whether this was a new technology or something that has simply not yet been accounted for in UN GTR No.22. The Swedish delegation clarified that they are not sure how technology is evolving but they are aware that their colleagues are currently working on these sorts of topics so it may be worth keep it on the EVE IWG radar. The co-chairs expressed that perhaps this discussion can take place again in Korea.

The secretary of the EVE IWG opened the floor to members of the Environmental and Propulsion Performance Requirements of L-category vehicles (EPPR) group to speak about topics of current interest between the two groups and discuss future work. No representative from the EPPR group spoke. The co-chair of the EVE IWG stated that they would be attending the upcoming EPPR meeting and will try to get a better understanding of what the EPPR is looking to discuss and collaborate on going forward.

Action items

- EVE IWG members to RSVP with the secretariat, if participating in-person in Korea, no later than April 1, 2024.

- The Japanese delegation to offer more details regarding the in-person EVE IWG session in Japan at the 69th EVE IWG session.
- EVE IWG to develop UN GTR No. 22 summary presentation for upcoming GRVA session.
- EVE IWG co-chair to participate at the upcoming EPPR meeting to discuss future work and collaboration opportunities.

Decisions