

Electric Vehicles and the Environment (EVE IWG)

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REPORT TO GRPE 76TH SESSION

Current Mandate

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- **Approved mandate targets approval of power determination GTR by AC.3 in November 2019 with flexibility to extend by up to 1 year based on results of validation testing**
 - Currently optimistic to meet that deadline without extension
- **Determination of electrified vehicle power**
 - Developing GTR to determine system power of PHEV and multi-motor PEVs, primarily for use with WLTP (downscaling, classification)
- **Electrified vehicle durability**
 - Continuing research on EV battery performance and durability
 - Return to AC.3 with recommendation for next steps (if any), or conclusion of topic
- **Method of stating energy consumption**
 - Approach the *Group of Experts on Energy Efficiency (GEEE)* to request that they assume leadership of the work

Next Steps for Determination of Electrified Vehicle Power

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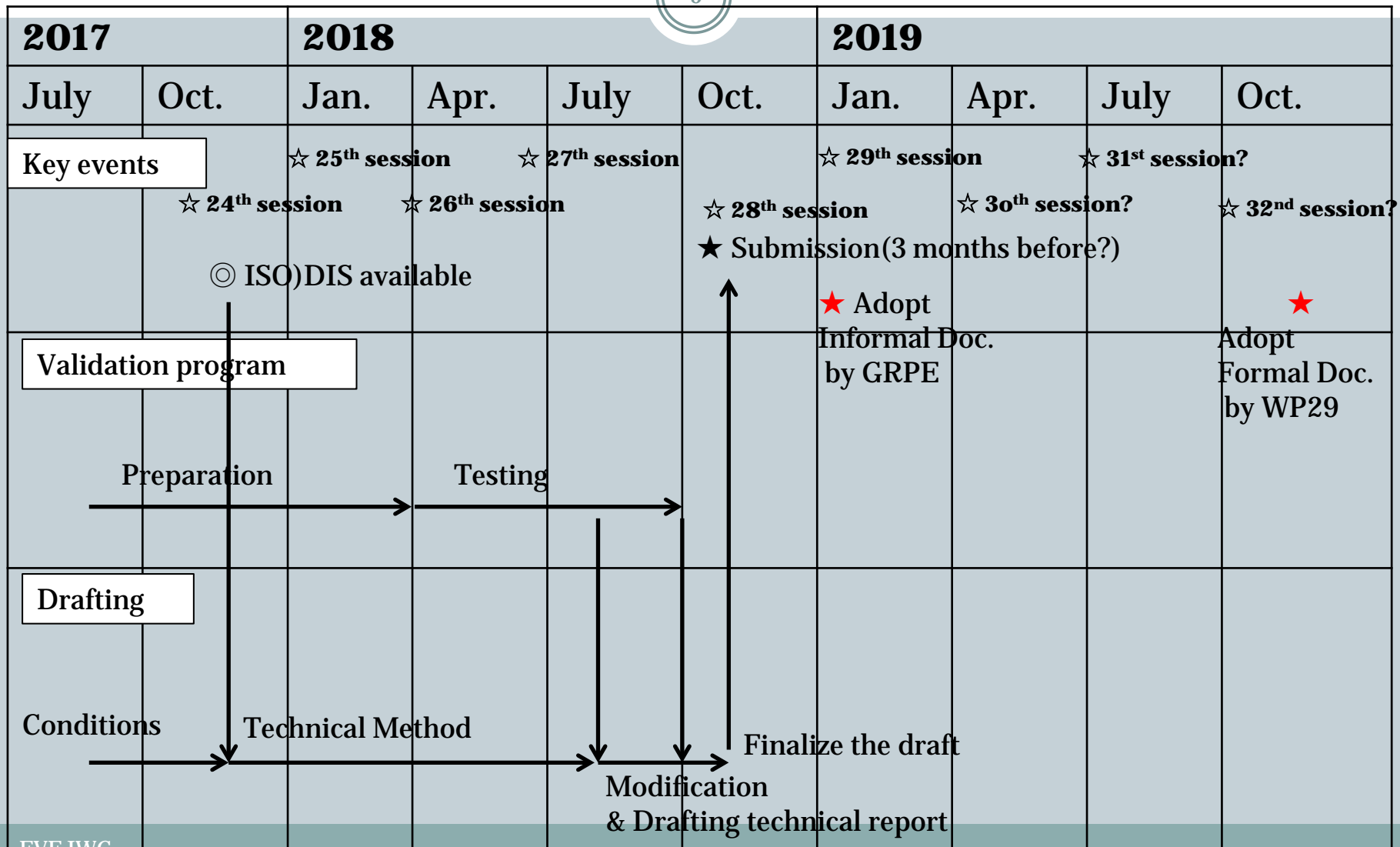
- **Initial plan for GTR development included:**
 - Reference Method, validated by vehicle testing
 - Candidate Method, which would allow certification based on component data
 - ✦ Candidate Method would only be developed if testing and analysis showed good correlation to the Reference Method
- **Current work is focused on development of the Reference Method, and Candidate Method will only be developed if time and resources permit validation**
- **EVE has continued close collaboration with WLTP, to ensure procedure and timelines meet WLTP needs**

Next Steps for Determination of Electrified Vehicle Power

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- **Drafting group has been formed**
- **Initial draft created based on ISO procedure**
- **Sharepoint site established for group editing**
- **Document formatted to follow UN style guidelines**
- **Adopted protocol for tracking open issues, expert input**
- **Several open issues identified, including validation needs**
- **Some confirmation needed, but EVE IWG hopes to begin validation testing in spring 2018**
 - **Canada, Korea, U.S.A. confirmed**
 - **JRC-OICA exploring possible validation testing partnership**

Planned Schedule for Determination of Electrified Vehicle Power



GRPE Feedback on Determination of Electrified Vehicle Power

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- **GRPE feedback requested on whether a EV power determination should be developed as a standalone GTR, or as an Appendix to GTR No.15**
- **Relevant considerations:**
 - Power determination for conventional vehicles is a standalone GTR
 - Currently, the primary intended purpose of the GTR is use with WLTP for classification and downscaling
 - Future use may include use by contracting parties for customer information purposes, registration requirements or taxation systems
 - Procedure will be applicable for PHEV and multi-motor PEV

Next Steps For Electrified Vehicle Durability

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- Recent work included development of a parametrized simulation model (JRC lead) validated by on-road testing (Canada lead)
 - Parameters include cell chemistry, battery architecture, battery reserve capacity, driving activity, vehicle architecture, charging power, charging frequency
- EVE IWG continues to cooperate with WLTP IWG to consider vehicle level durability requirements
- Final recommendation to AC.3 (likely in 2019) may include a recommendation to seek authorization for relevant additional activities such as GTR development, or may recommend concluding the topic

Next Steps for Method of Stating Energy Consumption

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- At conclusion of previous mandate, EVE noted that further improvement of EVE's models to assess energy consumption of electrified vehicles would require the work of experts in electricity generation and distribution
- On 01-Nov-2017, EVE Secretariat presented via WebEx to the *Group of Experts on Energy Efficiency (GEEE)* to request that they assume leadership of the topic, with the support of the EVE IWG as needed
 - Romain Hubert attended in person, as GRPE was between Secretariats
 - Presentation is posted at EVE-25-04e
<https://wiki.unece.org/display/trans/EVE+25th+Session>
- GEEE was receptive to the idea, and endorsed a proposal for the Group of Experts on Cleaner Electricity Production (CEP) to consider this work, with support of EVE IWG
 - No formal cooperation mechanism has yet been established

Overall EVE Next Steps

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- **Continue drafting of GTR for power determination**
- **Begin validation testing of GTR for power determination**
- **Improve and expand vehicle durability simulation and testing to validate the modeling**
- **Establish cooperation mechanism with GEEE and/or CEP experts to support work on a method of stating energy consumption**

EVE Meetings

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- Regular meetings concurrent with GRPE each January and June
- 10-11 April 2017 – Ann Arbor, USA
- 24-25 October 2017 – Vienna, Austria
- 27-28 March 2018 – Tokyo, Japan
<https://wiki.unece.org/display/trans/EVE+26th+Session>
- October 2018 – Ottawa, Canada
- Spring 2019 – TBD (if needed)
- Fall 2019 – TBD (if needed)