

System Power Determination

Electric Vehicles and the Environment (EVE IWG)

Discussion of validation testing plan of power determination test
procedure

24-Oct-2017

Global Actions and Commitments to Electrification/Low Carbon Vehicles

- ▶ **China** – Developing a version of the ZEV regulation
- ▶ **Québec** Province – Adopted a ZEV regulation
- ▶ **Netherlands, Norway** – Goal of 100% ZEVs and PHEVs by 2025
- ▶ **Germany** – Goal of 100% ZEVs and PHEVs by 2030
- ▶ **France, United Kingdom** – Ban of gasoline and diesel vehicles by 2040



Governors Brown (CA), Brown (OR), and Inslee (WA) with Fiji Prime Minister joining Under2 Coalition

Industry Commitments to Electrification/Low Carbon vehicles

Automaker Goals

- **Volvo** – Hybridize/Electrify all new models beginning 2019
- **Ford** – 13 new electrified vehicles by 2020
- **Daimler** – 10 new electrified vehicles by 2022
- **Volkswagen** – 30 new e-vehicles by 2025
- **Honda** – 2/3 of sales HEV, PHEV, or ZEV by 2030
- **Toyota** – Reduce global average new-vehicle CO₂ emissions by 90 percent by 2050
- **GM** – At least 20 electric car models on the road by 2023
- **Renault-Nissan-Mitsubishi** – To launch 12 new all-electric vehicles by 2022

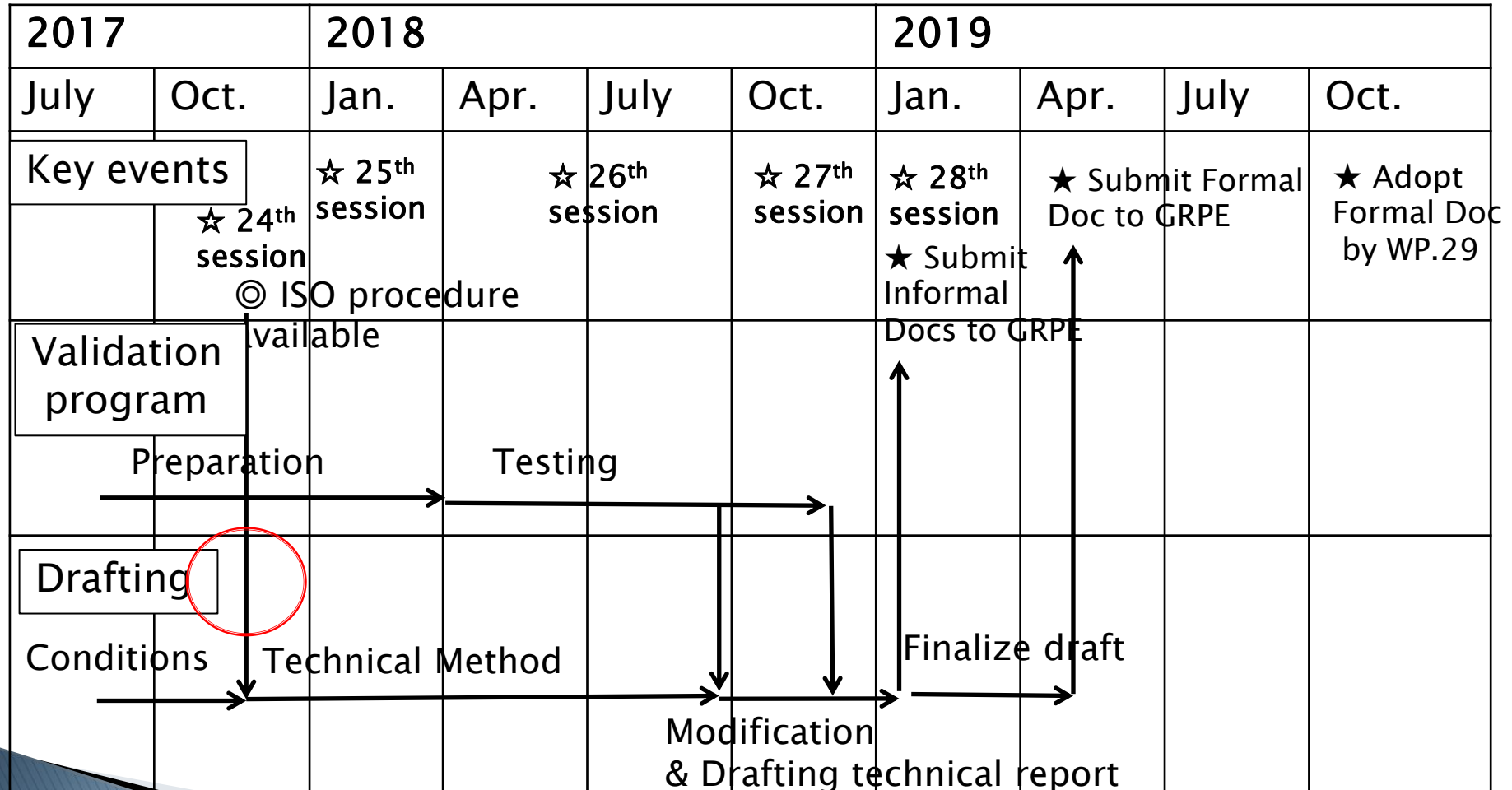
Determining Powertrain performance and the EVE mandate

- ▶ Mandated by WP.29 to examine environmental issues related to all types of road vehicles
- ▶ Tasked with developing GTR for determination of system power of electrified vehicles
- ▶ The procedure shall cover all types of HEV (ordinary –NOVC-HEVs and plug-in –OVC HEVs⁵) and including the following configurations:
 - ▶ Series HEV
 - ▶ Parallel HEV
 - ▶ Power split HEV

Current Confirmed Drafting Group

- ▶ Confirmed drafting group participants
 - Chair – Mike Safoutin, U.S. EPA
 - Dongseok CHOI, Korea
 - Elena Paffumi, JRC
 - Michele De Gennaro, JRC
 - Jiamiao Li, PSA
 - Matthias Nägeli, VW
 - Sam Tripathy, Renault
 - Norbert Klein, Hyundai
 - Kendelle Anstey, ECCC

Planned Schedule for Power Determination GTR Development



Work Plan Draft

- ▶ **I. Consideration of the concepts:**
 - Reference Method – Chassis Dyno
 - ~~Candidate Method – Component Testing and calculation~~
- ▶ **II. Consideration of the Open Points under paragraph**
 - Load Collectives and Maximum Power
 - Reference Method => Chassis Dyno Testing with completed vehicle
 - ~~Candidate Method => Component Testing and calculation to determine SP~~
 - Customer Information and other information with added value
- ▶ **III. Determination of work plan with task list and including allocation of work load**
- ▶ **IV. Proof of concepts: Studies with different types of HEVs including. series HEV, REX and PEVs (with one or more electric motors)**
- ▶ **V. Test, refine / improve and validation of the method(s)**
- ▶ **VI. Drafting of the regulation**
- ▶ **VII. Proposal for a draft amendment to GTR No. 15**
- ▶ **VIII. Approval at GRPE, voting at WP.29 AC.3**

Work on testing plan matrix

EVE-24-06e

Country	Vehicle Models to be Tested	Laboratory Locations	Timelines	Notes
Canada	<ul style="list-style-type: none"> • 2016 Chevrolet Volt • 2018 BMW 530e 	<ul style="list-style-type: none"> • River Road Facility 	<ul style="list-style-type: none"> • Anytime after spring 2018, with a few months notice 	<ul style="list-style-type: none"> • Already own Volt, 530e purchase approved and in process • Potential additional funding if warranted
JRC in Ispra/Europe	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Korea	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Korea Automobile Testing and Research Institute 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
U.S. EPA	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • U.S. National Vehicle and Fuels Emissions Laboratory 	<ul style="list-style-type: none"> • 2018 	<ul style="list-style-type: none"> •
OICA Contribution	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Others?	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •