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North America, Inc.

31 May 2022

Chair Liane Randolph
Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Advanced Clean Cars 2 (ACC II) Initial Statement of Reasons (ISOR) Comments

Mercedes-Benz USA, LLC ("MBUSA") and Mercedes-Benz Research and Development North America ("MBRDNA"), on behalf of the manufacturer of Mercedes-Benz vehicles, Mercedes-Benz AG (hereinafter "MBAG"), would like to thank the California Air Resources Board ("CARB") for the opportunity to provide comments on its Initial Statement of Reasons ("ISOR") for the Advanced Clean Cars 2 ("ACC II") regulation.

MBAG is on a pathway to becoming fully electric. As such, MBAG firmly supports CARB's goals to achieve carbon neutrality, just as we strive to achieve 100 percent sales of electric vehicles. MBAG has set bold ambitions to be a leader in the luxury segment's transition to electric vehicles.

Under our Ambition 2039 pathway[1], MBAG plans to be CO_2 neutral by 2039 and plans for all of our vehicles to be electric by the end of the decade, where market conditions allow. By the end of 2022, MBAG will have battery electric vehicles (BEV) in all segments the company serves. From 2025 onwards, all newly launched vehicle architectures will be electric-only and customers will be able to choose an all-electric alternative for every model we make. In total, our company's EV investments will amount to over €40 billion, or approximately $42.6 billion, between 2022 and 2030.

MBAG recognizes California as an environmental leader throughout the world. CARB's ACC II proposal will require unprecedented levels of investment in every facet of the auto industry from the supply chain to

[1] Ambition 2039: Our path to CO_2-neutrality

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manufacturing to the customer. While MBAG is already committed to electrifying our fleet, there will continue to be significant challenges associated with this transformation. The current market uncertainty associated with supply chain shortages, the need to build out U.S. processing and manufacturing capacity, workforce development needs, energy costs, etc., emphasizes the importance of maximizing options for supportive manufacturing and customer policies, and minimizing regulatory controls that detract from our shared goal of transitioning to electrification.

We believe it is critically important to continue the efforts already started in California to work with a broad range of stakeholders – including, but not limited to, all levels of government, utilities, charging and hydrogen station providers, dealers, builders, electricians, permitters, and more. Continued collaboration, partnerships, and ongoing efforts are needed to ensure the EV market grows to the point where every customer chooses to buy or lease an electric vehicle, whether in California or anywhere else in the United States. Indeed, we believe it is vitally important for the states that also adopt ACC II, to double down on their efforts, since many of these markets have to date demonstrated higher levels of uncertainty in the ability to advance EVs to the same extent as California.

Although CARB is mandating through ACC II that a larger percentage of vehicles sold by an auto manufacturer will increase to 100% in 2035, there is simply no assurance that consumers will actually purchase zero emission vehicles (ZEVs) in the amounts mandated. Therefore, it is critical that all states - - not just California - - that adopt ACC II implement policies that support the market. We encourage California to take advantage of the funds offered through the federal Infrastructure Investment and Jobs Act ("IIJA") as well as continuing to fund its own infrastructure program given that a well thought out, consistent, interconnected, infrastructure system needs to be put in place. Furthermore, as we noted in our comments on the Federal Highway Administration's solicitation for comments on their Guidance for Electric Vehicle Charging Infrastructure and Deployment[2], it is important for consumers to be able to rely on fully functional chargers. There will also be a need to continue incentives and outreach as we move beyond the early adopters and into the mainstream market, until there is cost parity with internal combustion engines. Lastly, there needs to be a willingness to be flexible with goals as it is likely that we will see more disruptions in the market which may impede our ability to meet ZEV goals by the dates we have targeted. It is not a matter of whether we will get there, because MBAG has committed its resources to achieving this goal and is focusing its plans to electrification, but when we will get there.

[2] MBAG Comments on FHWA's Development of Guidance for Electric Vehicle Charging Infrastructure Deployment – also filed along with the comments

To enhance California's proposed ACC II regulations, MBAG offers comments on the following:[3]

- Use of the 2022 version of SAE J1772 in the charging requirements
- The unrealistic timeline for data standardization requirements
- Service information requirements
- The need for battery durability, warranty and state of health (SOH) requirements to align with global standards
- Defect requirements
- Certification and credit considerations for medium-duty ZEVs
- A request to focus the medium duty vehicle (MDV) in-use testing requirements on the intended vocation

Our suggested amendments to these regulatory items align with CARB's own goals concerning the transition to EVs, while also minimizing the regulatory burdens and unnecessary costs that come with little to no associated emissions benefit.

[3] MBAG also supports the comments submitted by the Alliance for Automotive Innovation.

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ZEV Requirements

MBAG has reviewed the ZEV requirements in the ISOR. We have included two charts which summarize our understanding of the current requirements for full Battery Electric Vehicles (BEVs), the requirements for BEVs in the ISOR, as well as our recommendations or the current plan of record[4]. We believe some of the requirements are appropriate. The others are discussed below.

Category	Current BEV* Credits (through MY25)	Proposed BEV* Requirements (MY26+)	MBAG Recommendation/current plan of record
Charging Requirements	Per 1962.3	Per 1962.3 (Revised)	Per 1962.3 (Revised)
AC Charging and Inlet	Required - CCS (or CCS Adaptor)		CCS (or adaptor)
On Board Charger	≥3.3 kW or sufficient power to charge 0%→100% in < 4 hours	≥5.76kW or sufficient power to charge 0%→100% in < 4 hours	≥5.76kW or sufficient power to charge 0%→100% in < 4 hours
Convenience Cord	No requirement	Required with sale as specified in 1962.3	Optional at point of sale
DC Fast Charging and Inlet	No requirement	Required - CCS (or CCS Adaptor)	Required - CCS (or CCS Adaptor)
OBD II Connector	No requirement	Required per 1962.5	Required per 1962.5
Data Standardization	No requirement	Per 1962.5	Request for CARB to consider one or more of the following options: • Allow certification without credits for the duration of ACC II • Extend phase-in until MY2030 • Permit generation of credits with Executive Officer approval of alternative data stream proposal
Communication Protocol	No requirement	J1979-3 (ZEVonUDS) per 1962.5	
Fault Code Reporting	No requirement	Manufacturer defined monitoring and DTCs per SAE J2012 per 1962.5	
Data Stream (VIN, CALID, Vehicle info,…)	No requirement	Required, see 1962.5 section (c)	
State of Health Monitor	No requirement	SoH-Energy, normalized by Usable Battery Energy (UBE) per 1962.5	
State of Health Display in Instrument Cluster	No requirement	Required per 1962.5	Note: State of Health monitoring harmonized with UNECE GTR on Battery Durability for Electrified Vehicles.
Service Information	No requirement	1969 updated to focus on "Propulsion-related parts" and HV Traction Batteries	Enhanced Scan Tool and Service Info already available to independent service providers (subscription)

Table 1

[4] The focus in these comments is on BEVs only, even though the ZEV requirements include fuel cell electric vehicle (FCEV) as well as plug-in hybrid electric vehicle (PHEV) requirements

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Charging Requirements

MBAG supports all of the proposed charging requirements with two exceptions:

- First, MBAG recommends that CARB only require that auto companies offer the convenience cord at the time of sale. Such a requirement is unnecessary as it is not realistic that most customers will fail to keep a charging cord for their vehicle because it will instead be used for home charging. Furthermore, not all customers will want the cord as they may already have one from a previous vehicle.

- Second, the SAE Hybrid Committee is currently in the process of finalizing and publishing the SAE J1772 2022 edition. Therefore, MBAG recommends that CARB revise the text in § 1962.3(c)(1) and § 1962.3(c)(4) of the regulation to allow for the use of this version of the standard when it is published and any future revisions of the standard as follows (requested revisions are underlined):

> (1) Alternating Current (AC) Charger Inlet. Beginning with the 2006 model year, all vehicles identified in subsection (a) must be equipped with a conductive charger inlet and charging system which meets all the specifications applicable to AC Level 1 and Level 2 charging contained in Surface Vehicle Recommended Practice SAE J1772 REV JAN 2010, SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charger Coupler, which is incorporated herein by reference. **For the 2023 and subsequent model years, all vehicles identified in subsection (a) must be equipped with a conductive charger inlet and charging system which meets all the specifications applicable to AC Level 1 and Level 2 charging contained in Surface Vehicle Standard SAE J1772 REV OCT 2017, or the most recent published version of the standard, SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charger Coupler, which is incorporated herein by reference.** All such vehicles, manufactured through 2025 model year, must also be equipped with an on-board charger with a minimum output of 3.3 kilowatts, or, capable of providing sufficient power to enable a complete charge in less than 4 hours. All such vehicles manufactured for 2026 and subsequent model years must also be equipped with an on-board charger with a minimum output of 5.76 kilowatts (calculated as 24 amps at 240 volts AC) or capable of providing sufficient power to enable charging from a state of discharge to a full charge in less than 4 hours.
>
> (4) Direct Current (DC) Charger Inlet. For 2026 and subsequent model years, all vehicles subject to this section under subsection (a)(1) must be equipped with a DC inlet that meets the specifications applicable to DC charging contained in SAE J1772 REV OCT 2017**, or the most recent published version of the standard**, SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charger Coupler, which is incorporated herein by reference.

However, if CARB has misgivings with this approach, MBAG recommends that CARB consider making a revision in a 15 day notice after the 2022 version of SAE J1772 is finalized. This version should only apply to model year 2023 and beyond.

Data Standardization

CARB is proposing all new requirements for a standardized data communication protocol, fault code reporting, data stream, state of health monitor, and the state of health display in the instrument cluster via 13 CCR §1962.5 Data Standardization for ZEVs. Meeting the requirements applies not only to the ability to earn credits, but to sell these ZEV vehicles in CA or the Section 177 states. MBAG contests CARB's authority to require that ZEV vehicles that have no emissions must meet ACC II ZEV requirements as a condition for certification and sale. We maintain that if an automaker is already in compliance with its ZEV sales requirements, it should not be prohibited by CARB from selling additional BEVs simply because they do not adhere to (for example) the communication protocol requirement. That stated, we provide our perspective on the language as written in the ISOR specifically in regards to the data standardization requirements.

To ease manufacturer concerns related to the data stream requirements, CARB drafted a 2-year phase-in proposal which culminates in all vehicles meeting this requirement in MY2027 or MY2028 depending on if the standard or the manufacturer-defined phase-ins are utilized. In the Purpose and Rationale documents, CARB acknowledges this phase-in is "necessary and reasonable to allow manufacturers to spread the burden of bringing all [vehicles] into compliance with these requirements." MBAG posits that the 2-year phase-in is not a "reasonable" time-frame to comply with these new data standardization requirements.

First, CARB's statement that "many of these data parameters are already available" deliberately ignores and obfuscates the fact that the required reporting structure (i.e. the J1979-3, ZEVonUDS, communication protocol) is neither finalized nor even is a similar communication protocol implemented in many ZEVs today. While certain propulsion-related components may meet adjacent requirements (e.g. J1979-1, OBDonCAN) if shared between BEV and PHEVs, CARB's data standardization proposal will require a significant amount of software development for new and BEV specific components which will then necessitate significant lead time and financial investment.

Second, this phase-in ignores the standard cadence of vehicle refreshes. The standard vehicle life is approximately 6 years, and so a vehicle intended for market introduction in MY2024 may be scheduled to be sold through MY2030. With the introduction of Data Stream requirements, even if there is a 2-year phase-in, manufacturers must choose between pulling ahead a life-cycle update to comply with the new regulations (which may prevent development of new product and increase vehicle costs as there are fewer years to amortize the development costs) or completely withdraw a ZEV from the market in MY2027 if it does not meet supplemental requirements which do nothing to directly impact climate change.

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In addition to the unrealistic implementation timeframe for the proposed Data Standardization requirements, MBAG believes establishing these requirements as a condition for sale over-emphasize their relevance relative to the absolute environmental benefit that any ZEV (with or without Data Standardization) provides. Such impacts are clearly inimical to the regulation's goals. Therefore, MBAG would ask CARB to consider the following proposals, or a combination of the first two proposals below:

1. Allow certification without credits for the duration of ACC II: CARB should ensure vehicles conceptualized and developed prior to ACC II have a pathway to stay in the market. This option would be utilized sparingly to keep small volume vehicles, which do not have refresh plans in the near term, in the market. BEVs which do not meet the listed data stream requirements still provide customers a pathway to transition away from fossil fuel burning technologies, thus supporting the long term goal of environmental protection. Moreover, if the standardized data stream and warranty provisions are of significant importance to the customer, ample vehicles will still be available in the market for customers to purchase as this pathway will not generate credits for fleet average compliance.

2. Extend Phase-In until MY2030: A second alternative to prevent accelerated vehicle refresh timings which will drive up costs for the end consumer is extending the permitted phase-in to MY2030. The implementation of a gradual transition over 5-year period ensures that, for any vehicle introduced to the market prior to ACC II which follows the standard 6-year life cycle, manufacturers will not have the Hobson's Choice of deciding between a costly mid-lifecycle update to comply with Data Standardization requirements, or withdrawing a viable Zero Emissions option due to non-compliance of mandatory certification requirements which have no influence on greenhouse gas or criteria pollutant reduction.

3. Permit generation of credits with Executive Officer approval of alternative data stream proposal: A final option would be a structured pathway to Executive Officer approval for vehicles which deviate from the requirements set forth in 13 CCR §1962.5. Manufacturers should be able to propose alternative approaches to supporting 3rd party reparability such as making manufacturer specific enhanced scan tools which can readout the required information and service information readily available for purchase. With Executive Officer discretion, a vehicle's viability and certifiability can be evaluated allowing maximum flexibility to bring vehicles to market and ensure manufacturer fleet averages are met.

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Service Information

The service information requirements in the ISOR have been updated to focus on “Propulsion-related parts” and HV Traction Batteries. As we set forth in the previous section on data standardization, MBAG does not believe generic scan tool requirements should be mandatory.

The provision mandating auto manufacturers to make the enhanced diagnostic tool and related repair information to 3rd parties at a “Fair, reasonable, and nondiscriminatory price” is justifiable. To ensure customers have access to alternative repair options, MBAG supports this portion of the regulation, and we already make such enhanced tools and repair information available today through subscription options.

Category	Current BEV* Credits (through MY25)	Proposed BEV* Requirements (MY26+)	MBAG Recommendation/current plan of record
Battery Durability	No requirement	Maintain ≥ 80% of certified AER for 10 yr/150K mi per 1962.4	Harmonize with UNECE GTR Battery Durability for Electrified Vehicles - MPR: 80% SOH after 5 yrs/62,000 miles **and** 70% SOH after 8 yrs/100,000 miles In-Use Provisions requiring submission of customer vehicle SOH data Note: SOH is defined as State of Certified Energy (SOCE) in the UNECE GTR
In Use Testing	No requirement	Checking of SoH, AER and other Standardized Data per 1962.7	
Traction Battery Durability	Not applicable	CARB may test 10 or more vehicles Nonconformance: ≥50% of tested vehicles have <80% of certified AER	
Traction Battery SOH Accuracy	Not applicable	CARB may collect vehicle reported SOH and compare to CARB determined results (Dyno testing to evaluate Usable Battery Energy) Sample size is TBD Nonconformance: ≥10% of tested vehicles report an SOH that corresponds to a UBE > than CARB measured UBE by > 5% of certified UBE	
Warranty	No requirement	Per 1962.8	Details below
Powertrain Warranty	No requirement	EXCEPT Traction Battery Regular: 3 yrs/50K miles High Price: 7yrs/70K miles	MBAG has a 4yr/50,000 mile warranty
Traction Battery Warranty	No requirement	MY26-30: 70% SOH-E MY31+: 75% SOH-E For 8 yr/100K miles	Directly linked to UNECE GTR's Minimum Performance Rating (MPR), see above
Defect Reporting	No requirement	ZWIR (Warranty Information Report) if, in a quarter, unscreened warranty claims >1% or 25 vehicles (whichever is greater) ZFIR (Field Information Report) if cumulative unscreened warranty claims exceed 4% or 25 vehicles (whichever is greater) ZIR (Information Report) if cumulative screened warranty claims exceed 4% or 25 vehicles (whichever is greater)	Warranty reporting per the structure proposed below, ONLY for the traction battery Item / Basis / Proposed threshold EIR/ZIR / Screened / 10%/125 FIR/ZFIR / Unscreened / 10%/125 EWIR/ZWIR / Unscreened / 4%/50
Minimum All Electric Range (AER)	≥50 miles UDDS per 1962.2	≥200 miles 2 cycle per 1962.4	**LDV:** ≥200 miles 2 cycle per 1962.4 **MDV:** ≥50 miles UDDS
Battery Labeling (per 1962.6)	No requirement	Info to be added to current battery label: Vehicle & Battery Manufacturer, Date of manufacture, anode/cathode chemistry, system & cell voltage, cell count, rated capacity (and more) and QR code to additional information.	

Table 2

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Battery Durability

MBAG is requesting that CARB align the durability requirements with the United Nations Economic Commission for Europe (UNECE) Global Technical Regulations (GTR). These regulations were developed over several years by stakeholders representing governments, including EPA, and industry throughout the world. The UNECE GTR opted for Useable Battery Energy (UBE) rather than range because it focused solely on the durability of the battery. Range can be impacted by how customers use their vehicles as well as by many other factors that the auto manufacturer cannot control in the design of the battery or vehicle. As was outlined in the Alliance for Automotive Innovation's comments, we support using a Minimum Performance Requirement (MPR) where batteries must maintain at least 80% State of Health[5] (SOH) after 5 years or 100,000 km (62,000 miles) and 70% SOH after 8 years or 160,000 km (100,000 miles). Additionally, MBAG firmly believes that CARB should monitor what is going on in Phase 2 of the GTR where data on range will be collected and analyzed, so that CARB can possibly adopt future standards based on that assessment. As currently written, the requirement will result in additional costs without emission benefits.

In Use Testing

The ISOR includes in-use testing to verify data stream, (both battery SOH and fault code reporting) as well as battery durability. MBAG argues above that standardized data stream requirements should not be required, thereby eliminating the need for in use testing. As for battery durability, MBAG supports providing SOH information as in the UNECE GTR. This could be seen as analogous to the In-Use Monitoring Performance Ratio (IUMPR) data submission requirements for ICEVs.

Definition of Propulsion-Related Part

While MBAG agrees with the spirit of the proposed "Propulsion-related part" definition, the phrasing provided in the ISOR is overly broad and risks regulating components that are out of scope such as a drive shaft, axle, or tires. MBAG supports the proposal made by the Alliance for Automotive Innovation to refine the definition as follows:

> "Propulsion-related part" means any **electronic** system, component, or part ~~**that is used**~~ **whose failure will directly impede the ability** to refuel or recharge the vehicle, store fuel or energy for the vehicle (excluding the battery), propel the vehicle, or recover or recoup vehicle kinetic energy, including components used to control, manage, or thermally manage such propulsion-related parts. These parts include drive motor(s), inverter(s), converter(s), on-board charging system

[5] State of Health is defined in the UNECE GTR as State of Certified Energy.

components, fuel cell stack components, refueling and fuel tank components, fuel cell air and fuel delivery components, regenerative braking system components, and the power electronics, electronic control units, and thermal management systems of such components and systems **providing propulsion, thermal management, recharging and energy storage, conversion and related diagnosis within the vehicle. Advanced driver assistance systems (ADAS) and safety-related components and systems are not considered "propulsion-related parts" for the purpose of this regulation**.

Warranty

CARB has specified warranty requirements for both the powertrain and the traction battery in the ISOR. CARB has tied the traction battery warranty provisions to the deterioration of the State of Health (SOH), which reflects both the entire energy capacity as well as the reserve of the battery. MBAG continues to recommend the UNECE GTR as the minimum warranty requirement, utilizing the MPR outlined above in our comments on battery durability.

MBAG also recommends that CARB remove the warranty requirements for propulsion-related equipment. Since BEVs emit no emissions, there is no health impact should these parts fail. Failure of propulsion-related parts is primarily a competitive issue, and it is in the best interest of auto manufacturers to ensure that these parts meet customer expectations. In support of our customers, the Mercedes-Benz EQS comes with a 4yr/50,000 mile powertrain warranty and an industry leading 10yr/155,000 mile warranty on its traction battery.

Defect Reporting

CARB has included in the ISOR specifications for a ZEV Warranty Information Report (ZWIR), a ZEV Field Information Report (ZFIR), and a ZEV Information Report (ZIR). As defects do not impact emissions or the environment, CARB appears to be speciously mandating quality/consumer protection under the guise of environmental protection. Therefore, MBAG believes that CARB should not be mandating this type of reporting in ACC II. Nevertheless, MBAG recommends that CARB revise the defect reporting provisions to focus solely on the traction battery at the higher reporting rates listed below:

Item	Basis	ISOR	Proposed Threshold
EWIR/ZIR	Screened	4%/50	10%/125
FIR/ZFIR	Unscreened	4%/50	10%/125
EWIR/ZWIR	Unscreened	1%/25	4%/50

Certification and Credit Considerations for Medium Duty ZEVs

MBAG's commitment to a cleaner future expands beyond electrification of just Light Duty Vehicles (LDV). To enable environmental change in the MDV sector, the eSprinter was announced for the US Market in December 2020[6]. The eSprinter, and following MDVs, will be a key consideration in paving the way to a clean future as electrifying an MDV may provide more environmental benefit (GHG and criteria pollution) on a per-vehicle basis that that of LDVs due to the different considerations – e.g. higher usage rate, extended idles, and frequent short trips.

With Advanced Clean Trucks (ACT)[7], CARB introduced fleet average requirements for Zero-Emission medium and heavy duty vehicles and technical requirements to claim credits starting in MY2024. Unfortunately the ACT regulation only refers to incomplete MDVs when discussing technical requirements for certification and credit. The ACC II package[8] seeks to clarify the certification and credit requirements for complete MD-ZEVs in 13 CCR §1962.4 however the proposed language in ACC II causes undue burden on manufacturers and risks preventing electrified vehicles from entering the market.

The intended ACC II regulation will require compliance with ACT or ACC II for certification and sale of MD-ZEVs. While this consideration is more than generous on the surface, a deeper look at the technical requirements brings up many areas of concern:

1. ACC II Minimum All Electric Range (AER) Requirements: a sensible price point is one of the key customer requirements when shopping for MDVs. As battery packs are one of the most significant costs in manufacturing ZEVs, various battery pack sizes shall be available for purchase allowing customers to actively balance their own range requirements and vehicle costs. The aggressive range, warranty, and durability requirements may jeopardize consumer acceptance as unnecessary vehicle capability must be built in to meet regulatory requirements, thereby rapidly and artificially increasing vehicle costs. Therefore, MBAG requests that CARB retain the current minimum range requirements set forth in ACC (13 CCR §1962.2) for MDVs.

2. ACT Data Stream Information: ACT and ACC II require different information and communication protocols to support in-use repair and customer support. These technical differences not only provide little to no benefit in day-to-day operation, they will also necessitate unique software development to comply with the intended certification and credit program.

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[6] https://media.mbusa.com/releases/release-34b22cdf3837beba024634fab12b0056-mercedes-benz-vans-announces-next-generation-esprinter-based-on-newly-developed-electric-versatility-platform

[7] 13 CCR §1963.2

[8] This reference and MBAG's comments are based on information CARB shared with the Alliance for Auto Innovation in regards to the language CARB plans to include in the 15-day change language regarding MDV certification requirements and the ability to earn credits in ACC II.

MBAG solely develops and produces Light and Medium Duty Vehicles when it comes to Internal Combustion Vehicles (ICV), an organizational decision that allows cost effective development and part sharing as the technical requirements are relatively similar between these two vehicle classes – e.g. Both LDV and MDVs are subject to the same OBD-Regulations under 1968.2. However, if a manufacturer like MBAG is forced to certify under ACT for a reason such as not satisfying the minimum range requirement, significant vehicle cost increases will likely be incurred, or it may become necessary to consider completely canceling the product in the US as the barriers to entry may be too high.

3. Data Stream Phase-In: Regardless of the selected regulatory package, ACC II or ACT, the inclusion of Data Stream requirements starting MY2026 significantly impacts ZEVs which are already on sale or nearing end of development.

Thus, MBAG recommends CARB implements the following:

1. Establish minimum certification requirements for MD-ZEVs: By permitting certification and sale of MD-ZEVs which meet the proposed minimum certification requirements (see MBAG Recommendation in Tables 1 and 2) MD-ZEVs will be able to easily enter the market with reasonable development and manufacturing costs leading to affordable price points for our customers. The end goal for all parties is environmental protection. Therefore, CARB should ensure as many vehicles as possible can transition to a Zero-Emissions platform as soon as possible.

2. Allow MD-ZEVs to be used to meet the Fleet Average Requirements: As the minimum certification requirements are proposed only as a backstop to allow ZEV sales, Manufacturers must still meet the required fleet average requirements outlined in both ACT and ACC II. As a method to incentivize the transition to a clean future and over compliance with fleet average requirements which would lead to increased ZEV penetration, CARB should allow:

    a. Optional compliance with ACC II regulations with the exception of minimum range requirements: Direct certification to ACC II is an ideal pathway for manufacturers such as MBAG which share a common platform across LDV and MDVs. This option will reduce the technical complexity of vehicle development and required training for in-use maintenance. To ensure market demands are met (e.g. cost conscious, short range vehicles) MBAG proposes that MD-ZEVs be subject to an alternative minimum range than defined for LDVs: $\geq$ 50 miles UDDS.

    b. Credit Transfer from ACT to ACC II: MBAG supports the proposal set forth by the Alliance for Automotive Innovation, namely, direct transfer of credits from vehicles which meet and

are certified to the Advanced Clean Trucks regulation may encourage additional MDV production if excess credits are permitted to be transferred over to ensure the LDV fleet average under ACC II is met.

Criteria Pollutants: MDV In-Use Testing Requirement

Background

The proposed regulation would require that MY 2027 and subsequent model year chassis certified medium-duty vehicles with a gross combined weight rating (GCWR) over 14,000 pounds to meet a new in-use requirement moving average window (MAW) requirement using a new test procedure. The test procedures and standards for this new in-use requirement are similar to those CARB recently adopted as part of the Heavy-Duty Low NOx Omnibus rulemaking at the August 2020 board hearing.

The new in-use requirement for chassis certified MDVs would require manufacturers to design the emission controls to meet an in-use emission standard that is measured by a Portable Emissions Measurement System (PEMS) temporarily installed on the vehicle during on-road driving.

During the ACCII rulemaking process, CARB has repeatedly indicated that vehicles such as the MBAG Sprinter are not the target of the PEMS MAW requirement. However, as the regulation is written, several variants of the MBAG Sprinter would now fall into the category of vehicles required to meet the requirements. As this is of obvious concern to MBAG, we would therefore request that CARB revise the GCWR thresholds to accurately reflect the type of vehicle intended to be included in this new requirement (pick-up trucks with high towing capacities and use cases that involve long durations of towing operations).

Summary of Concerns

- Applicability of Requirement to MBAG Vehicles.
- Feasibility of the standard.
    - Stringency of the emissions level laid out by the requirement.
- Lack of clarity in the test procedure.

MBAG proposes alternative pathways and proposed changes to the regulatory text to improve feasibility of the requirements and to provide alignment with the stated goals of the provisions.

Applicability of Requirement to MBAG Vehicles

During CARB's October 13th, 2021 workshop on the development of the Advanced Clean Cars II, the following slide was presented by CARB staff:

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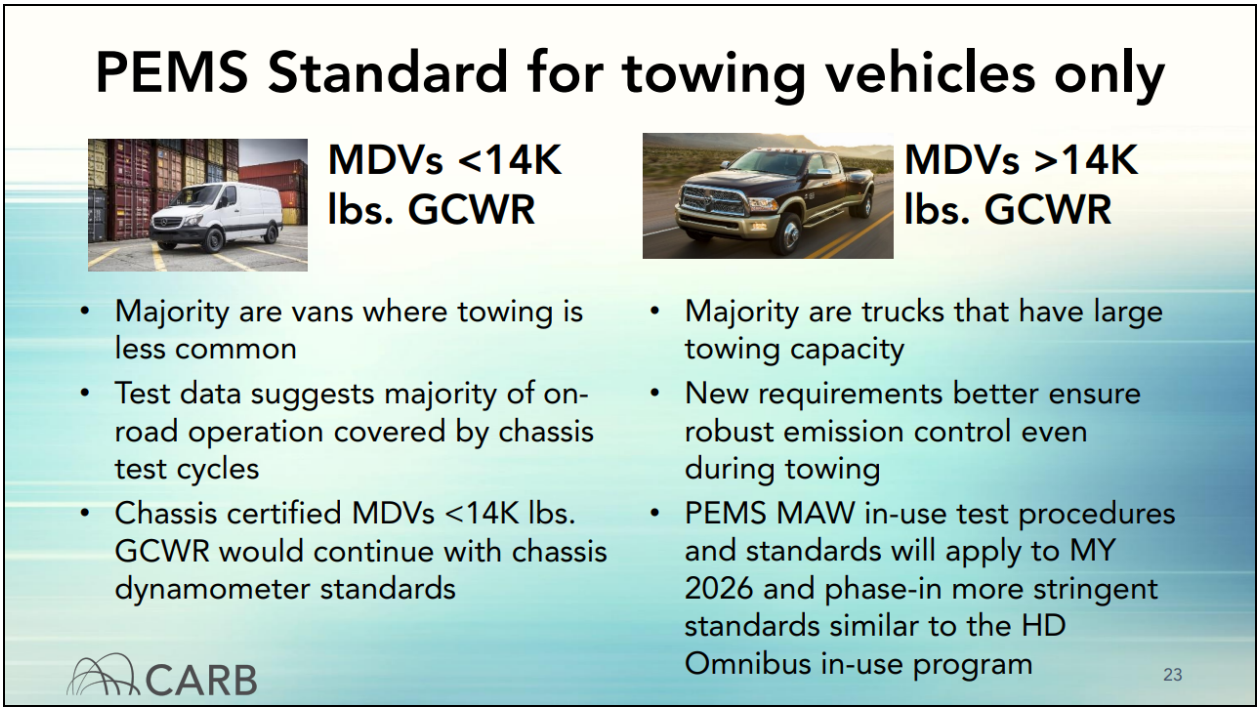

Slide 23 from CARB's Presentation: Advanced Clean Cars Workshop October 2021

The example used by CARB to illustrate its point that MDV (e.g. vans) are not the target the MAW regulation is a Mercedes-Benz Sprinter van. However, several variants of the Mercedes Sprinter van have a GCWR above 14,000lb. Although clearly not the target of the PEMS standard, these units would now have to meet the PEMS MAW requirements. CARB itself states that the target of these regulations is "...trucks that have large towing capacity" not "...vans where towing is less common".

As an example, one of the Emission Data Vehicles for the MBAG Sprinter van test groups has a maximum gross combined weight rating (GCWR) of 15,250lb, but of that weight, 12,125lb could be chassis gross vehicle weight rating (GVWR) and the balance of remaining weight would be tow capacity of 3,125lb. At this chassis weight, only 21% of the total weight would be tow weight, which differs substantially from the tow weight profile of the trucks that this draft requirement has targeted. The maximum tow capability, depending on the hardware configuration of the Sprinter variant, would be capped at less than half of the total GCWR. Many trucks offered in the California market are capable of towing multiples of their max chassis weight GVWR, rather than the comparatively small fractional amount that MBAG Sprinters are capable of towing. Pick-up trucks on the other hand are designed and marketed primarily for their hauling and towing capacities. For example, the Ford Super Duty pickup truck is capable of a maximum trailer capacity of between 18,200lb to 24,200lb depending on the option package. A Dodge Ram 3500 has a GVWR of between 10,700lb-14,000lb, with a GCWR of between 21,500lb-43,000lb.

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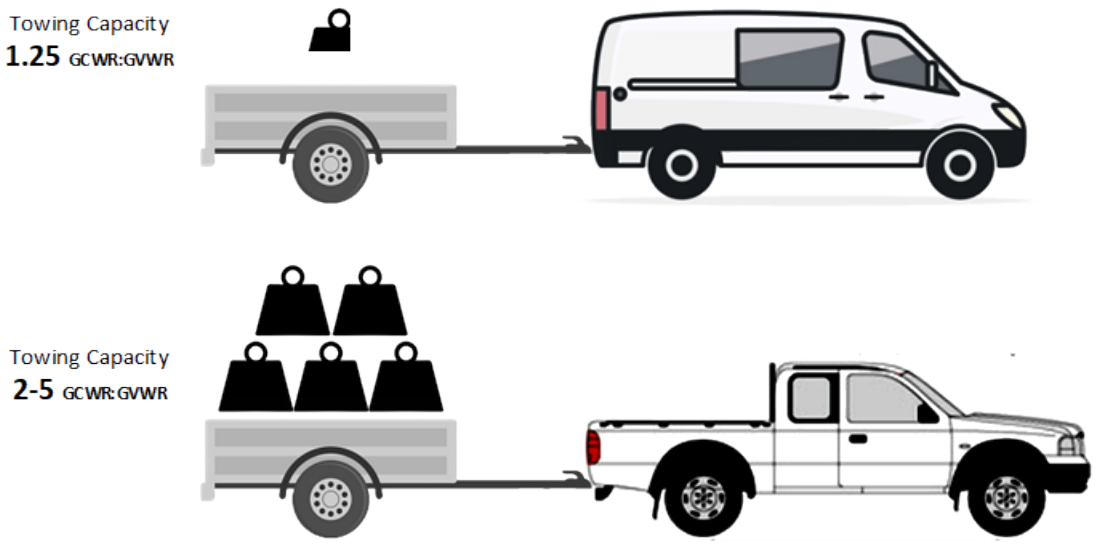

Illustrative example of a typical pickup truck towing capability vs the Mercedes Benz Sprinter towing capability. Typical pickup trucks can tow multiple of their own weight, Sprinter vans do not share this capability, as it is not their use case to be commonly used for towing.

A majority of Sprinter vans that are factory-equipped with tow hitches are all-wheel drive variants of the product. Many of these vehicles are then up-fitted and used as recreational vehicles. These vehicles are typically used for limited periods of time when compared to pick-up trucks used for work applications that see daily use. These recreational vehicles are equipped for operation over unimproved terrain and would, therefore, not be operating on paved roads such as the ones that CARB would be conducting In-Use MAW PEMS testing, as laid out in S4.1.7.

The majority of Mercedes Sprinter vans are primarily used for last mile delivery applications rather than for towing. MBAG is concerned that by introducing this new MAW requirement for vans used for last mile delivery, CARB may inadvertently work against its goal to have newer, more efficient vehicles introduced onto Californian roads.

As companies work to modernize their fleets, particularly for delivery vehicles, cost and availability of newer vehicles remains a major concern for end purchasers. The PEMS requirement may increase the price of last-mile delivery vehicles such as the Mercedes Sprinter as the increased test burden and technological challenges associated with meeting this requirement would create new obligations for manufacturers.

By limiting a manufacturer's ability to introduce vehicles equipped with modern emission reduction technology, fleet operators may retain vehicles with a higher emissions impact for longer periods of time rather than replacing them with more efficient vehicles. Disparate impact may also be felt by community-

based organizations and businesses in disadvantaged and low-income communities, who would be well served by increased access to newer vehicles at a reasonable cost to replace ageing vehicles and fleets.

Additionally, Sprinter vans are commonly used for vocational use by small businesses and sole proprietors such as plumbers or electricians, who do not commonly use these vehicles for towing, but would be impacted negatively by the increased regulatory burden of these requirements.

Feasibility of the PEMS Standard: Stringency of the Requirement – Application of Heavy-Duty standards on Light-Duty derived engines and Conformity Factor (CF) considerations

S4.1.13.3 states that:

> The vehicle passes the test if the SOS emissions are less than or equal to the defined threshold for every pollutant fulfilling the equation:
>
> $E_{sos\ a} \leq$ CF x FTP standard
>
> Where:
>
> CF is the conformity factor equal to 2.0 for 2027 through 2029 model year vehicles. For 2030 and subsequent model year vehicles, the conformity factor is equal to 1.5.

The European limit for truck engine bench testing on NOx is approximately 343 mg/bhp-hr. The European PEMS NOx standard calculated with a CF of 1.5 is 515 mg/bhp-hr. Meanwhile under the MAW provisions of ACC2 a SULEV 175 vehicle would have its PEMS NOx limit at about 30 to 40 mg/bhp-hr (CF 1.5 to 2). The PEMS NOx emission standard proposed is 4 to 6 times more ambitious when compared to SULEV175 for Model Year 2027.

As an example: SULEV 175 means a vehicle on a dyno test has an FTP and standalone SFTP standard of 175 mg/mi NMOG+NOx (NMOG only relevant in cold start tests). By contrast, the same vehicle would need to comply with a NOx PEMS standard on the road (based on MBAG first evaluations) of approximately 44 mg/mi (i.e. 25% of FTP/SFTP standard). This estimate considers the conformity factor of 1.5.

MBAG is concerned about the stringency of the requirement as laid out in the draft regulation. In the *Staff Report: Initial Statement of Reasons* posted by CARB on April 12, 2022, it was proposed that an interim conformity factor of 2.0 be used for model years 2027 through 2032 and 1.5 for model year 2033 and beyond. MBAG believes this proposal is a more feasible standard than the interim conformity factors proposed in the draft regulation text as seen above.

MBAG also proposes that Medium-Duty manufacturers be allowed the option to use SULEV 175 FTP standard to set the applicable PEMS In-Use testing limits as an alternative as the Moving Average Window method. The powertrain implemented in the MBAG Sprinter, the OM654, was developed from a light duty platform and is certified using light duty vehicle testing methods. MBAG requests that an additional option be provided to comply with MDV PEMS testing using the light duty FTP Standard SULEV175 requirements using mg/mi rather than the g/bhp-hr standard that favors heavy-duty derived engines with much greater engine power.

As CARB explains in the ISOR released April 12, 2022, "MDVs have often shared powertrains with slightly smaller light-duty applications", which is also true in the case of the Mercedes Sprinter. The Sprinter's powertrain is derived from a passenger car engine. The MAW in-use requirement seems to favor manufacturers who are utilizing higher engine power engines, because it would be easier for that manufacturer to fulfil an emission limit that is set in mg per brake horsepower hour.

CARB's stated reason for implementing a MAW in-use PEMS requirement is the fact that the engines certified under the process outlined in 13 CCR 1956.8 are more difficult for CARB to perform than official confirmatory testing as they would require engines to be dissembled from vehicles and tested in specific laboratories designed to directly test engines. CARB also stated its goal to improve transparency and ability to ensure emissions are adequately controlled across engine operations that occur on-road. MBAG has provided CARB off cycle data including PEMS since 2017. Vehicles are tested at the max chassis GVWR using PEMS and data is provided in our applications for Executive Order approval, thus satisfying CARB's stated goal of obtaining in-use data for the Medium-Duty categorized vehicles such as the Mercedes Sprinter van.

Additional Considerations: Measurement Challenges

As the Heavy Duty Low NOx Ominibus requirements for in-use MAW standards are not effective until Model Year 2024, the feasibility of the standard remains untested.

Additionally, current state of the art PEMS technology may have trouble capturing accurate test data to the level that CARB specifies in its draft language for MAW requirements. Industry leading PEMS is not specified for +/- 2.5ppm zero drift as CARB proposed in ACC2.

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PEMS Field Testing and Range Criteria S 4.2.2.2 specifies:

> Only for NO, NO2, and NOx, do not apply the drift validation criteria in 40 CFR § 1065.550(b)(3)(i) or (b)(4), only if the drift value is equal to or within +/-2.5 ppm criteria. If the zero drift check is equal to or within +/- 2.5 ppm, the data is valid and drift correction may be used. **If the zero drift check is greater than +/- 2.5 ppm, data is invalidated and drift correction may not be used.** In addition, for any windows of the 3B-MAW or MAW method containing any drift invalidated data described in this paragraph, these windows are also invalidated. For valid NO, NO2, and NOx data, subject to use drift readings within +/- 2.5 ppm for drift correction, the corrected values calculated from the drift correction equation, Eq. 1065-672-1, must be used for SOS emission calculations as described in these test procedures.
>
> (Emphasis added)

MBAG is concerned that this level of zero drift check is too low when 4 ppm is an industry best for PEMS technology specification. For example, PEMS technology commonly employed currently by manufacturers such as AVL's GPiS has a technical specification of NO drift for +/- 2 ppm and NO2 drift of +/- 4 ppm, which could equate to a NOx drift of +/- 6ppm. The very latest generation of PEMS technology such as AVL's GPiS+ is rated as technical specification of zero NO drift of +/- 2 ppm and a zero drift specification of +/- 2 ppm for NO2, which equates to a NOx zero drift specification of +/- 4 ppm.

We request that the zero drift check value be raised from +/- 2.5 ppm to +/-4 ppm, so that the rule proposed by CARB would match the specifications of the equipment currently available and in-use by manufacturers. With this prohibitively low drift value in the draft regulatory text, development testing to comply with the requirement will be difficult as no PEMS equipment is yet able to comply with the requirements. Additionally, we are concerned that with supply chain issues and manufacturing lead-time required for new specialized PEMS units, availability to manufacturers of new PEMS equipment may be quite limited as there will be a large volume of manufacturers either updating their PEMS equipment or purchasing new units.

Test Procedures Lack Sufficient Clarity

MBAG is concerned that the test procedures for Three Binned MAW and MAW proposed by CARB lack sufficient clarity.

Test Procedures for Three Binned Moving Average Window (3B-MAW) and Moving Average Window (MAW). This applies to 2027 and subsequent model year diesel and Otto-cycle vehicles, and S4.1.7 states only that:

> Testing shall be conducted while driving on California paved roads, or on roads which are representative of conditions found on California's paved roads.

Without further specificity included in the test procedure, tests may be conducted in any number of unrepresentative driving conditions and scenarios outside of expected operating conditions. MBAG-manufactured vehicles that would be included in the GCWR class over 14,000lb and thus subject to the MAW requirements are, in general, used primarily for urban delivery vehicles, last mile delivery, or transport.

The lack of guardrails on the allowed test procedures would allow tests to be run in scenarios far outside of average operation such as extreme incline or elevation. There would be endless combinations of variables once the vehicles are on road, not all of which would accurately capture expected use.

MBAG requests that CARB further define test procedures so that test conditions would align more closely with the type of operation that vehicles are expected to be driven in. Providing a test philosophy or predefined routes would assist in complying with the rule and maintaining test consistency, while also maintaining variability due to traffic patterns that accurately reflect real-world operation of the vehicles and provide accurate insight into emissions levels.

Proposed Modifications

To advance CARB's goals of ensuring consistency in emission control across the various options and to ensure emissions are adequately controlled during all engine operations that occur on-road, especially during towing while still allowing manufacturer flexibility and innovation, MBAG proposes the following options to modify CARB's proposal of PEMS In-Use Standards for MDV greater than 14,000lb:

Option 1 – Introduction of a GVWR vs GCWR ratio

Introduce the GVWR ratio based towing ratio requirement to ensure that the requirement is focused on trucks with large towing capacities rather than van-type vehicles.

Update S4:

> 4. California Provisions: Certification and In-Use testing requirements for chassis certified Medium-Duty Vehicles (MDV) with a Gross Combined Weight Rating (GCWR) greater than 14,000 pounds, using the Moving Average Window (MAW).
>
> *to*
>
> 4. California Provisions: Certification and In-Use testing requirements for chassis certified Medium-Duty Vehicles (MDV) with a Gross Combined Weight Rating (GCWR) greater than 14,000 pounds and have a GCWR to GVWR ratio greater than 1.5, using the Moving Average Window.

MBAG believes that this modification still accurately captures CARB's desire to ensure consistency in emission control during periods of towing for vehicles with large towing capacities. Particularly for MDV pickup trucks that are often rated for a very high GCWR. This addition of a tow ratio requirement would provide manufacturers of last-mile delivery vehicles with low towing capacities such as MBAG the opportunity to introduce new innovative vehicles to the Californian market.

Option 2 – Modification of the GCWR Threshold

Update the GCWR weight threshold for PEMS In-Use Standards from a GCWR of 14,000lb to 16,000lb

Update S4:

> 4. California Provisions: Certification and In-Use testing requirements for chassis certified Medium-Duty Vehicles (MDV) with a Gross Combined Weight Rating (GCWR) greater than 14,000 pounds, using the Moving Average Window (MAW).
>
> *to*
>
> 4. California Provisions: Certification and In-Use testing requirements for chassis certified Medium-Duty Vehicles (MDV) with a Gross Combined Weight Rating (GCWR) greater than 16,000 pounds, using the Moving Average Window (MAW).

MBAG believes that this modest increase in the threshold for applicability to the MAW requirement would still accurately capture CARB's desire to ensure consistency in emission control during periods of towing, while providing manufacturers of last-mile delivery vehicles with low towing capacities such as MBAG the opportunity to introduce new innovative vehicles to the Californian market.

Conclusion

MBAG thanks CARB for considering our comments on the ACC II ISOR. As we've noted throughout these comments, MBAG is aligned with CARB's goals of achieving 100% ZEV sales. Notwithstanding that alignment, some of the specific requirements in ACC II will increase the cost of vehicles yet provide no environmental benefits and will impede the certification and sale of certain ZEV vehicles due to overly stringent requirements. If our mutual goal is to increase ZEV sales as quickly as possible, CARB would do well to consider some of the ways we have suggested to address these concerns. To recap, these include considering options to address the unrealistic timeframe for implementing the data standardization requirements, aligning the battery durability and warranty requirements along with the SOH metric with the UNECE GTR, and taking one of our suggestions as to how to focus the MAW PEMs on the intended vocation (i.e. full size pick-up trucks predominantly used as towing vehicles).

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We would be delighted to answer any questions you may have with respect to the foregoing.

Sincerely,

MERCEDES-BENZ RESEARCH & DEVELOPMENT N.A., INC.

By: Amy Klinkenberger May 31, 2022
Amy Klinkenberger, Senior Manager Date

-AND-

MERCEDES-BENZ USA, LLC

By: 5/31/22
Gregory Gunther, Manager Date

Mercedes-Benz

28 January 2022

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U.S. Department of Transportation
1200 New Jersey Ave., SE
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RE: MBAG Comments on FHWA's Development of Guidance for Electric Vehicle Charging Infrastructure Deployment [Docket No. FHWA-2021-0022]

Mercedes-Benz USA, LLC ("MBUSA") and Mercedes-Benz Research and Development North America ("MBRDNA"), on behalf of the manufacturer of Mercedes-Benz vehicles, Mercedes-Benz AG, (hereinafter collectively "MBAG"), would like to thank the Federal Highway Administration ("FHWA") for the opportunity to provide comments on its November 29, 2021 *Federal Register* notice requesting comment on the Development of Guidance for Electric Vehicle Charging Infrastructure and Deployment [Docket No. FHWA-2021-0022]. MBAG appreciates that Congress and President Biden have passed the bipartisan Infrastructure Investment and Jobs Act (IIJA).

MBAG's electric vehicle ("EV") strategy and goals for EV deployment in the US are fully aligned with the goals and objectives of the IIJA. Indeed, the IIJA reflects a shared appreciation with MBAG that the future of transportation is electric[1]. MBAG has invested significantly in EVs and will launch several EV models in 2022 and beyond. For example, by the end of 2022, MBAG will have battery electric vehicles (BEV) in all of our light duty passenger vehicle segments. From 2025 onwards, all of our newly launched vehicle architectures will be electric-only, and customers will be able to choose an all-electric alternative for every model the company makes. In regards to our vans, we are investing approximately $400 million in the development of the eSprinter 2.0, and we will be manufacturing the MY24 VS30 eSprinter 2.0 at our Charleston, SC plant for the US market.

In order to help achieve an electric future, it is vital that a well thought out, consistent, interconnected, infrastructure system is put in place throughout the country to encourage consumers to purchase zero emission vehicles ("ZEVs") and to achieve ambitious ZEV sales and greenhouse gas ("GHG") reduction goals. Comprehensive guidance and templates with key program elements for states to utilize will go a long way to achieve these mutually beneficial goals. MBAG's comments address the following considerations: 1, 2, 3, 5, 6, 7, 8 and 9. MBAG also endorses the comments filed by the Alliance for Automotive Innovation ("Auto Innovators").

[1] The White House" FACT SHEET: The Biden-Harris Electric Vehicle Charging Action Plan", (2021)

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Consideration 1: The distance between publicly available EV charging infrastructure

MBAG suggests that the distance between urban centers and corridors be determined by different approaches. The distance between chargers for urban settings should be based on the number of people in the area needing to charge. This approach will serve the needs of people who cannot charge at home or for when people are going about their daily activities. Our suggestion for urban areas is to base it on the number of EV registrations per metropolitan statistical area ("MSA").

For corridors, the government needs a method to determine a baseline build-out level (e.g. 10 chargers per site), and then factor in anticipated utilization. New sites should establish a way to measure queuing, to better understand growing charger needs along corridors over time as adoption increases. Convenience should be factored into the design of chargers, regardless of the location, so that the chargers are maximally utilized.

Consideration 2: Connections to the electric grid, including electric distribution upgrades; vehicle-to-grid integration, including smart charge management or other protocols that can minimize impacts to the grid; alignment with electric distribution interconnection processes, and plans for the use of renewable energy sources to power charging and energy storage

MBAG supports a requirement to have OEMs establish interoperability between vehicles and chargers. (Mercedes-Benz vehicles utilize ISO 15118 for interoperability and the MercedesMe app.) Our charging systems are equipped for managing charging according to standards worldwide. It will be important that charging stations are networked so that they can interact with the vehicles. These vehicle systems will enable drivers to do many things starting with paying for charging.

- Consumers should be able to access pricing information including any surcharges and fees, as well as real time information about charger status.
- Consumers should be able to schedule charging sessions. MBAG also advocates for the use of common pricing (per kWh) so consumers can make decisions about where and when to charge.
- Chargers should offer the ability to purchase renewable energy and be aware of price differences for purchasing renewable energy.

All information in this regard should be transparent to the consumer and displayed in an easy to read display on the charger.

The payment system must be easy to use and should be uniform. The goal should be to avoid the "EZ Pass" phenomenon, or a situation where each municipality, (or private lot) has its own app that needs to be downloaded in order to pay. Every app that is downloaded requires the customer to enter credit card and other information into the app before the app will enable charging.

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Lastly, MBAG believes it is critical that FHWA prioritize cybersecurity by ensuring that there are systems in place to protect the entire charging ecosystem. We are pleased that ISO 15118 has been updated to include additional cybersecurity.

Consideration 3: The proximity of existing off highway travel centers, fuel retailers, and small businesses to EV charging infrastructure acquired or funded under the Program

Chargers can be located at existing businesses, highway centers, or dedicated charging hubs. MBAG believes it is important for chargers to be located at all of these types of facilities, and all of these charging locations should meet the needs of specific people and situations as well as the general public. However, what is most important is that they are convenient, safe, and offer a variety of amenities such as restrooms, restaurants, coffee bars, and conveniences stores. These locations need to be comfortable with adequate seating and Wi-Fi connectivity. They also must be safe so that consumers are comfortable using them at all hours of the day. Solicitations for funding should require minimum safety standards and include a scoring mechanism based on the number and types of amenities. More points should be provided for higher priority amenities such as safety aspects and restrooms.

To increase the awareness of consumers about where they can find chargers, we suggest that signage be located along highway corridors as well as at or near businesses where there are chargers. Signage should follow the standardized design for EV Charging as detailed in Figure 2I-1 in the Manual on Uniform Traffic Control Devices[2] so that it is easily recognized.

Consideration 5: The long-term operation and maintenance of publicly available EV charging infrastructure to avoid stranded assets and protect the investment of public funds in that infrastructure

Consumers need to be able to rely on fully functional chargers. Therefore, maintenance of chargers is a high priority, especially for those chargers receiving public funding. FHWA should set a goal for both minimum charger downtime and reliability standards. Auto Innovators' comments provide some examples of standards already in place in New York as well as a model state grant and procurement program by the Northeast States for Coordinated Air Use Management ("NESCAUM"). MBAG recommends the implementation of an audit system and some type of enforcement to ensure maintenance takes place.

[2] Dept. of Transportation, Manual on Uniform Traffic Control Devices, (2009), p. 301

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As a way to incentivize maintenance, MBAG suggests that the funds be dispersed over time based on charger downtime and reliability. Some EVSEs allow customers to rate their charging experience. MBAG encourages FHWA's guidance to encourage or require these types of rating systems.

Consideration 6: Existing private, national, State, local, Tribal, and territorial government EV charging infrastructure programs and incentives

In order to quickly increase the sales of ZEV vehicles, MBAG believes adequate infrastructure is needed that includes support for it at all levels of government. While the federal government should show leadership, we believe that State, local, and Tribal levels can best identify and address local needs. Furthermore, many agencies at the State, local, and Tribal levels already have programs in place and/or are in the process of augmenting or creating new programs. For instance, the California Energy Commission (CEC) is in the process of developing a Statewide ZEV Infrastructure Plan (ZIP) which is intended to "articulate what CA is doing to support infrastructure deployment". The federal guidance should build upon those programs and study them to learn what has and has not worked, and why.

Incentives at all levels of government will continue to be necessary until such time when charging companies can make a business case for constructing and maintaining chargers. It would be helpful to see guidance on how businesses can increase the chance to earn money from their chargers. For instance, we agree with the comments that were made by DOE's Director of Loan Programs at the National EV Charging Summit that touch upon the need for creative financing which would ensure the "private sector dollars" invested in infrastructure "make a lot of money." Lastly, FHWA should stipulate what factors should be met before ending incentives such as a certain level of usage per day.

Consideration 7: Fostering enhanced, coordinated, public-private or private investment in EV charging infrastructure

MBAG supports Auto Innovator's suggestion to create an Electric Vehicle Working group to identify and report on barriers, opportunities, and EV needs. Additionally, MBAG recommends that FHWA's guidance encourage tax breaks and/or tax incentives to businesses that install and operate chargers for a minimum amount of time, and to advocate for methods to educate businesses on the advantages of installing chargers. Businesses will be more likely to install chargers if they understand that customers will likely spend money at their businesses while they are waiting for their vehicle to charge.

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Consideration 8: Meeting current and anticipated market demands for EV charging infrastructure, including with regard to power levels and charging speed, and minimizing the time to charge current and anticipated vehicles

The industry is already seeing advancements in batteries and vehicles in the market with extended ranges. MBAG believes the dialogue will now turn from range to charger speed. There will always be customers who will want to charge slowly while their vehicle is at a location for a long time or at home due to the convenience, as well as to take advantage of the low rates. Yet there will also be a growing demand for higher speed charging. MBAG would like to see FHWA recommend that local chargers for light duty vehicles are at, and above 200 kWh, and highway chargers are at and above 350 kWh. We would advocate for high speed charging for medium duty vehicles. Additionally, when sites are being developed, we recommend that these sites be required to be permitted and prepped to be upgraded to higher speeds. Regarding goal-setting, FHWA should set an ultimate goal to move towards refueling times that compete with fueling an ICE vehicle.

Depending on the type of charging site, the design should be geared towards the types of vehicles and chargers that are anticipated at that location. Vehicles come in many shapes and sizes and the charging ports are located in various locations on the vehicle. Therefore, the layout of the chargers should be designed to accommodate as many different vehicle configurations as possible. Additionally, the design should provide adequate space for light commercial vehicles to park and charge. As such, it would be helpful if the guidance includes a recommendation for 10 charge points. Also, charging cords need to be long enough so that they can reach the port of the parked vehicle, even if it is located on the opposite side of the vehicle from the charger. As stated herein, charging stations should be able to service the maximum amount of vehicles from an interoperability perspective by providing both CCS and SAE J1772 connectors. Additionally, we maintain that methods should be deployed to eliminate idle charging such as implementing fees to encourage customers to move their vehicles once they are fully charged. MBAG suggests that FHWA develop guidance to address all of these issues as well as any others not specifically set forth in these comments. Lastly, MBAG fully supports what is set forth in Auto Innovator's "Planning for the Electric Future: Charging Station Attributes[3].

Consideration 9: Any other factors, as determined by the Secretary

Requirements for funding solicitations: Funding solicitations should be designed so that awards are only given out to applicants that meet minimal criteria. MBAG suggests that FHWA look to the CEC's approach to solicitations for hydrogen stations[4], and use competitive bids, scoring criteria, and project narrative to identify and reward the best, most financially viable proposals. We recommend a

[3] Alliance for Automotive Innovation, "Planning for the Electric Future Charging Station Attributes",
[4] An example of a CEC solicitation for H2 infrastructure can be found at this site: GFO-19-602 - Hydrogen Refueling Infrastructure (ca.gov).

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data reporting requirement of three years before the final portion of funds is Disbursed, to ensure that stations are actually operated.

Future proofing: The agencies should undertake an evaluation of what to anticipate in the future in regards to types of chargers, volumes, and locations. Based on what is gleaned from that evaluation, the agencies should tailor their investments to what will be needed in the future to supplement present needs. As stated herein, chargers should be upgradable, but we believe that there are many other aspects to consider to ensure chargers do not become outdated. These include a possible movement to higher voltage levels, wireless charging, V2G, and different use cases.

Reliability of the grid and peak demand: If the country is going to dramatically increase the ownership and use of ZEV vehicles at the same time that the government wants to encourage the use of electricity for stationary sources, we can expect a huge increase in demand to be placed on the grid. Of course without national coordination and planning, we will find ourselves bereft of the power to go about our daily lives. Of greater concern, a failure of the grid could have disastrous consequences during emergency situations. When considering the need to protect the grid by addressing cybersecurity, we think now is the time for the government at all levels to be planning to make sure the grid is ready.

In conclusion, we thank FHWA for drafting the Guidance for Electric Vehicle Charging Infrastructure Deployment and for considering our comments. We firmly believe that the development of a national infrastructure plan to support a growing ZEV market will be instrumental in combatting climate change. MBAG looks forward to our continued partnership on these important issues.

Sincerely,

MERCEDES-BENZ RESEARCH & DEVELOPMENT N.A., INC.

By: Amy Klinkenberger 1/28/2022
Amy Klinkenberger, Senior Manager Date

-AND-

MERCEDES-BENZ USA, LLC

By: _____ 1/28/2022
Gregory Gunther, Manager Date