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January 16th, 2024

Jason McPhee, Project Lead
California Air Resources Board

Re: CARB Proposed Regulation Order "Amendments to On-Road Motorcycle Emission Standards and Test Procedures and Adoption of New On-Board Diagnostics and Zero-Emission Motorcycle Requirements"

Dear Mr. McPhee and California Air Resources Board:

Polaris Inc. (Polaris), on behalf of Polaris and Indian Motorcycle Company, respectfully submits these comments regarding the recently released proposed regulation order "Proposed Amendments to On-Road Motorcycle Emission Standards and Test Procedures and Adoption of New On-Board Diagnostics and Zero-Emission Motorcycle Requirements".

The Polaris comments are as follows:

1. Zero Emission Motorcycles

   §1958.5(c) describes how to qualify for fast charge credits. Point (c)(1)(B) includes the following text: "…capable of providing sufficient power to enable charging from a state of discharge to a full charge in less than 4 hours." Polaris requests additional text to clarify the definition of discharge and full charge to provide regulatory certainty in how to determine if this criterion is met. We propose defining the state of discharge and full charge using percentages of depth of discharge (DoD). For example, discharged would mean >80% DoD and full charge would mean <20% DoD.

   Battery technology has not matured enough to support the range expectations for large touring motorcycles. As such, it is expected that smaller, shorter range urban motorcycles will make up much of the ZEM early adoption period. Polaris recommends CARB updates §1958.5(d) to increase the credit multiplier for Tier II ZEMs from 3x to 4x for MY24 – MY27, and from 1.5x to 2x for MY28 – MY30.

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§1958.5(e) describes credit generation for ZEM sales in MY36 and subsequent and states that no additional credits or multipliers apply during this period. Polaris proposes CARB updates this section to include the fast charge credit for vehicles equipped with DC fast charging capabilities.

The ZEM credit proposal provides incentives to begin selling ZEMs before the mandatory phase in starts in MY28. Polaris proposes that §1958.5(h) is updated to expand this incentive by permanently exempting early adoption credits earned for MY24 through MY27 from expiration. In addition, Polaris proposes the expiration of early adoptions credits earned for MY28 through MY30 is extended to 10 years. Credits earned starting in MY31 would then be the first to be subject to the 5-year expiration period.

2. Tailpipe Emissions

The test fuel specified in "California 2028 and Subsequent Model Year Exhaust Emission Standards and Test Procedures for On-Road Motorcycles", Part I (D)17 specifies fuel that meets the applicable specifications in Part II, section A of the "California 2026 and Subsequent Model Year Criteria Pollutant Exhaust Emissions Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" incorporated by reference in title 13, CCR, section 1961.4. This is CARB LEV IV fuel, which is a new test fuel for the motorcycle industry that has not been required in the past. Polaris respectfully requests that the fuel specification is updated to revert to using CARB LEV III fuel. Reverting to CARB LEV III fuel will prevent manufacturers from being required to maintain inventory of two different CARB test fuels.

Polaris requests CARB and EPA agree to reduce burden on manufacturers by:

- Allowing two sets of emission testing to be conducted on the same service accumulation DF vehicle. One set of tests would be conducted using EU E5 fuel (or CARB LEV III) and the WMTC duty cycle and the other set of tests would be conducted using the EPA Tier II test fuel (or CARB LEV III) and the UDDS duty cycle.
- Allowing service accumulation on a shared DF vehicle to be conducted using the EU5 service accumulation duty cycle (SRC-LeCV) instead of the EPA service accumulation cycle.
- Allowing service accumulation emissions test intervals to be determined following the EU5+ test schedule and waive the requirement to test directly before and after a scheduled service interval that occurs during the service accumulation distance.

The application process described in §1958(e) requires manufacturers to submit a copy of the EPA Certificate of Conformity as part of the CARB certification application. Polaris proposes that CARB accepts applications for certification and starts the review process before the EPA CoC is available. Later, when the EPA CoC is issued, the manufacturer would then provide a copy to CARB as a revision to the application. This will allow applicants to avoid excessive lead

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time required if these approvals were completed in series. Polaris requests updates to the regulatory text to clarify this allowance.

3. Evaporative Emissions

The test fuel specified in TP-934 paragraph 1.4 specifies fuel that meets the applicable specifications in Part II, section A.3.1 of the "California 2026 and Subsequent Model Year Criteria Pollutant Exhaust Emissions Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" incorporated by reference in title 13, CCR, section 1961.4. This is CARB LEV IV fuel, which is a new test fuel for the motorcycle industry that has not been required in the past. Polaris respectfully requests that the fuel specification is updated to revert to using CARB LEV III fuel. Reverting to CARB LEV III fuel will prevent manufacturers from being required to maintain inventory of two different CARB test fuels.

TP-934 describes a test sequence where a purge and load cycle is to be conducted to the carbon canister in section 5.2 and a second purge and load cycle is conducted to the same canister in section 6.1.1.6. We do not believe there is a technical reason to conduct the first purge and load cycle given the fact that section 6.1.1.2. requires the vehicle to run a WMTC drive cycle, which will purge the canister, ahead of the drain and refill and subsequent 12 – 36 hour soak the precedes the second purge and load cycle in section 6.1.1.6. Polaris requests CARB updates TP-934 to remove the purge and load cycle described in section 5.2 to reduce the resource and calendar time burden associated with the unnecessary procedure.

TP-934 section 10.1 c) specifies cooling blower placement at 0.3 +/- 0.05 meters in front of the vehicle. This is different than the cooling blower placement described in 40 CFR §86.508-78, Regulation (EU) No 134/2014, Annex II, 4.5.2.5.3. and "California 2028 and Subsequent Model Year Exhaust Emission Standards and Test Procedures for On-Road Motorcycles" Part II, B.1. all of which specify the cooling blower outlet must be between 0.3 and 0.45m in front of the front wheel. Polaris requests CARB updates TP-934 to harmonize with the EPA, EU, and CARB tailpipe emissions testing requirements.

Polaris has identified the following areas where clarification in the text of TP-934 would be helpful to avoid inconsistent interpretations in the future:

- TP-934 testing can be conducted on a different vehicle than emissions durability testing, as indicated in section 4, Figure 2 by the "Evaporative Only" test sequence. Please add a note in the text to make this clear.
- TP-901 durability testing applies to the fuel tank only, not the rest of the fuel system (carbon canister, hoses from tank to canister, etc.). The first paragraph under section 4 should be updated to provide this clarity.
- Durability testing (reference section 4, Figure 2) is to be conducted on either a carbon canister system, or a pressure relief valve system, but not both.

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- Three-wheeled vehicles should not be subject to the lateral tilt test requirement described in section 4.3.1.2.
- Per section 6.3.1.10, the hot soak and diurnal SHED testing is to be conducted with luggage compartments and glove boxes closed.
- A small amount of fuel (a quarter of a gallon or more) is sufficient to keep the fuel system "exposed to fuel" during transport between labs. Please provide clarity in the paragraph after section 5, figure 5.

In addition, Polaris identified the following typographical issues with the TP-934 final regulatory proposal:

- The final hydrocarbon and alcohol concentrations are incorrectly labeled the same as the initial values in section 6.2.9.
- The note in section 5 directly after the Figure 5 pre-conditioning flowchart has 5.2 and 5.1 inverted, causing confusion in the text. We believe this should read "Note that Section 5.1 testing may occur after Section 5.2 if…".
- Section 3 and section 9 reference an outdated version of Regulation (EU) No 134/2014 from March 2018. A new version was published in December 2023.

4. On-Board Diagnostics

The test fuel specified in §1958.2(c)(1)(A)1. specifies fuel that meets the applicable specifications in Part II, section A.3.1 of the "California 2026 and Subsequent Model Year Criteria Pollutant Exhaust Emissions Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" incorporated by reference in title 13, CCR, section 1961.4. This is CARB LEV IV fuel, which is a new test fuel for the motorcycle industry that has not been required in the past. Polaris respectfully requests that the fuel specification is updated to revert to using CARB LEV III fuel. Reverting to CARB LEV III fuel will prevent manufacturers from being required to maintain inventory of two different CARB test fuels.

The IUMPR minimum sample size requirements in §1958.2(e)(2)(C) is significantly higher than the minimum sample size that applies to large volume manufacturers in "California 2026 and Subsequent Model Year Criteria Pollutant Exhaust Emissions Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles". Polaris recommends aligning the motorcycle sample size with those for passenger cars, light-duty trucks, and medium-duty vehicles.

The reporting deadline for IUMPR in §1958.2(e)(2)(A) is 12 months from the later of first introduction into commerce or the start of normal production. This is inconsistent with the 18-month reporting deadline from Regulation (EU) No 44/2014, Annex XII. Polaris believes that the additional 6 months is necessary to provide sufficient time for motorcycles to meet the

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minimum mileage requirements and provide sufficient time for all monitors to be exercised during use. Polaris requests the CARB proposal is updated to harmonize with the EU requirement.

Production Motorcycle Evaluation Testing is very labor intensive. Motorcycle sales volumes are far lower than those of LDVs and this testing places a heavy burden on the limited resources at our disposal to support this work. Polaris requests an update to §1958.2 (g)(1)(B)4 to require testing on only one motorcycle per year.

One of the requirements to qualify a motorcycle for inclusion in an IUMPR test sample group is to have mileage less than 75% of useful life and more than the manufacturer's recommended break-in period plus 1000 miles, as documented in §1958.3(b)(3)(D)(1)(c). Polaris requests the CARB proposal is updated to harmonize with Regulation (EU) No 44/2014 Annex XII, which requires a maximum of useful life and a minimum of 3000 km.

Thank you for the opportunity to contribute to the rulemaking process and for the ability to provide comments and proposed changes ahead of the CARB Board Meeting schedule on January 25th, 2024.

If you would like to discuss these comments ahead of the meeting, you can reach me at 262-374-0568, or by email at dane.hoechst@polaris.com.

Sincerely,

Dane Hoechst
Sr. Manager, Regulatory Affairs
Polaris Inc.

Cc: Scott Bacon, Manager Engineering & Regulation Development Section (CARB)
Harjeet Gill, Sr. Director Product Compliance & Global Standards Development (Polaris)