AMERICAN AUTOMAKERS
AAPC

August 25, 2020

To: **California Air Resources Board**
Clerk's Office
1001 I Street
Sacramento, California 95814

Re: **AAPC Comments on the Proposed Heavy-Duty Engine and Vehicle Omnibus Regulation and Associated Amendments**

Board Item: hdomnibus2020
VIA https://arb.ca.gov

Dear California Air Resources Board:

On behalf of its member companies – FCA US LLC, Ford Motor Company and General Motors Company – the American Automotive Policy Council (AAPC) offers the following comments concerning the in-use requirements and test procedures for gasoline (Otto) engines included in CARB's Proposed Heavy-duty Engine and Vehicle Omnibus Regulation. Of importance, CARB staff focused their efforts solely on diesel engines for the in-use moving average window demonstration program, and did not provide consideration for test methodologies and procedures that are unique to gasoline engines.

CARB's goal of changing the in-use program to a moving average window approach is to ensure real world emissions are more representative of certification test cycle performance. To this end, the moving average window in-use methodology covers a broader range of vehicle operation, and we support this effort. However, we request that CARB staff consider revisions to the data acceptance criteria described in the test procedures. As an example, CARB has excluded cold start operation until 2027MY and has a minimum average power threshold. Criteria such as these were considered primarily for diesel engine technology without similar consideration for unique gasoline challenges.

There are inherent combustion differences between gasoline and diesel engines that must be, but were not, accounted for in CARB's proposed in-use requirements. While gasoline engines easily maintain minimum aftertreatment temperatures for good conversion efficiency during low load operation, they must avoid damaging aftertreatment and engine componentry under aggressive and/or sustained high load operation. High temperature resistant components and materials have been

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implemented in modern gasoline heavy-duty engines to reduce this concern. However, there is still a need to utilize fuel enrichment under aggressive and/or sustained high load operation to protect engine and aftertreatment components.

Additional technologies could be explored to further reduce the impact during these periodic events, and will require major engine and/or exhaust system design changes. If enrichment is completely eliminated, the result will be significant loss in vehicle capability. Complete elimination of enrichment events will require a large increase in engine displacement in order to preserve customer demanded performance, resulting in much higher CO_2 emissions. Research is needed to assess the trade-offs with CO2 and cold start emissions performance.

We recommend that CARB and EPA work with industry to study and assess new heavy-duty gasoline in-use requirements. The EPA is currently undertaking a focused effort through a gasoline demonstration program as part of their heavy-duty Low NOx Cleaner Trucks Initiative (CTI) regulatory development targeting a 2027MY implementation. A coordinated effort could align with CARB's Phase 2 (2027MY) step when in-use cold starts are included. Until necessary research is complete, the AAPC recommends CARB exclude these component protection events from the in-use moving average window test procedure.

Regards,

Matt Blunt
President