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February 5, 2018

Clerk of the Board
Air Resources Board
1001 I Street
Sacramento, CA 95814

Subject: Proposed California Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines and Vehicles and Proposed Amendments to the Tractor-Trailer GHG Regulation

Members of the Board:

The Alliance of Automobile Manufacturers[1] (Alliance) represents 12 car and light truck manufacturers, of which four (FCA, Ford Motor Company, General Motors, and Mercedes-Benz) also produce medium- and heavy-duty vehicles (MDV/HDVs) affected by the "Proposed California Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines and Vehicles and Proposed Amendments to the Tractor-Trailer GHG Regulation"[2] (hereafter, "HDV GHG Phase 2 regulations").

Over the past year, the Alliance and our MDV/HDV members have worked closely with Air Resources Board (ARB) staff to review proposals and suggest changes that meet ARB's goals while reducing the burden and complexity for manufacturers. We sincerely appreciate the Staff's work and consideration.

Unfortunately, despite this work, **we cannot and do not support the current proposal** because it eliminates the Advanced Technology Credit (ATC) multipliers even before the 2027 sunset date.

Like the light-duty vehicle (LDV) GHG regulations, the federal and California HDV GHG Phase 2 regulations contain limited-time multipliers for Zero Emission Vehicles (ZEVs, which are referred to as "advanced technology vehicles" in the HD regulations) such as fuel cell, battery, and plug-in hybrid electric vehicles (FCEV, BEV, and PHEV, respectively). However, the proposed regulations eliminate that multiplier if ARB adopts a ZEV mandate for HDVs. This elimination is unnecessary (since the multipliers sunset after 2027) and contrary to both the federal HDV regulations and ARB's own LDV GHG regulations, which provide ATC multipliers for a limited

[1] Alliance members include BMW, Chrysler, Ford, General Motors, Jaguar Land Rover, Mazda, Mercedes-Benz, Mitsubishi, Porsche, Toyota, Volkswagen, and Volvo. Please visit www.autoalliance.org for further information.

[2] Air Resources Board, *Proposed California Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines and Vehicles and Proposed Amendments to the Tractor-Trailer GHG Regulation*, issued December 19, 2017.

period regardless of other mandates and regulations. This is also contrary to ARB's own comments recommending EPA extend the ATC multiplier credits:

> These technologies are potential game-changers and are worth the potential small emission disbenefit…Also, in the long term, the reduction in benefits would be worthwhile due to the anticipated support for development of advanced technologies.[3]
>
> These technologies currently have substantial incremental costs, which advanced technology credits could help bring down. These advanced technologies currently have higher initial costs compared to diesel or gasoline approaches due to low production volumes and higher manufacturer costs. For instance, incremental costs for vehicles using battery electric approaches is estimated at up to about $90,000 for a medium-duty vehicle (8,501 to 14,000 lbs GVWR), and substantially more for a vehicle in the heavier classes.[4]
>
> Advanced technology credits would promote research, development and production of advanced technologies and eventual transfer of these technologies to other applications[5]
>
> Advanced technology credits would accelerate consumer acceptance[6] (emphasis in original)

At a high level, while we believe ARB's intent as explained in the ISOR is to harmonize with the current federal HD GHG standards, the proposed differences in treatment of ATC multipliers result in ARB requirements that are more stringent than federal requirements. As explained further below, these differences would undermine current regulatory incentives for advanced technology vehicles, increase the stringency of the ARB requirements, and raise costs for manufacturers to comply.

We divide the remainder of this letter into two parts. First, we provide general comments on the regulations. Specifically, we recommend ARB retain the "Deemed to Comply" provision and we support ARB's adoption of regulations on glider vehicles, engines, and kits. Second, we propose specific changes to the regulations and/or test procedures related to the California Environmental Performance Label (CEPL), advanced technology credit (ATC) multipliers, and low global warming potential (GWP) air conditioning leakage.

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[3] Nichols, M. (2015, October 1). California Air Resources Board's (CARB) Specific Comments on Greenhouse Gas Emissions (GHG) Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, Phase 2 Proposed Rules [Letter to Administrator Gina McCarthy]. Attachment, page 71.

[4] *Id.* Page 72

[5] *Id.*

[6] *Id.*

1. General comments on the regulations

a. **Deemed to Comply**: We encourage ARB to reconsider its proposal and instead adopt a "deemed to comply" provision. ARB's inclusion of a "deemed to comply" provision in its HD Phase 1 rule and its Advanced Clean Car Program helped to harmonize these federal and California programs and achieve the desired environmental benefits in a cost-effective manner. We understand the concerns expressed in the Initial Statement of Reasons (ISOR) regarding "deemed to comply" and certification. However, the costs to industry, ARB, and EPA, of having separate regulations and separate certification processes far outweigh any benefits of creating separate requirements. Moreover, once the agencies divide, that divide tends only to grow resulting in even greater burden on the agencies and industry.

The ISOR repeatedly states that ARB's intent is for the California standards to "harmonize with" and be "nearly identical to" the federal standards in structure, timing, and stringency, "providing nationwide consistency for engine and vehicle manufacturers" and allowing manufacturers "to build a single fleet of compliant vehicles and engines for the U.S. market."[7] However, the proposed California "distinctions" could lead to a situation where California's standards are more stringent than the federal standards, in addition to creating separate recordkeeping and reporting requirements and calculations. For example, as noted above, ARB proposes eliminating ATC multipliers if it adopts a ZEV mandate for HDVs. If indeed ARB then implements a regulation requiring automakers to produce zero emission heavy-duty vehicles, those vehicles would qualify for ATC multipliers under the federal program but not the California program. This would run counter to the purpose of the EPA multiplier.

Additionally, ARB proposes a minimum all-electric range (AER) for plug-in hybrid electric vehicles (PHEVs) receiving advanced technology credit (ATC) multipliers. This minor change compared to the federal requirements could lead ARB to develop new certification tests for determining AER values. Once developed and adopted, manufacturers will need to certify over the new cycles. ARB Staff will also need to devote lab and staff time to reviewing the results and conducting independent tests.

As ARB slowly erodes harmonized requirements, agencies and industry will undoubtedly devote considerable resources to develop what are essentially overlapping regulatory requirements, separately certifying vehicles to these different requirements, and then tracking compliance. Moreover, automakers report compliance and manage fleets not only at ARB and EPA but also in the states that have adopted the California requirements.

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[7] ARB, *Proposed California Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines and Vehicles and Proposed Amendments to the Tractor-Trailer GHG Regulation, Staff Report: Initial Statement of Reasons,* December 19, 2017, pages II-3,4

An approach that would better balance the costs and benefits to all stakeholders involved is necessary here. Ideally, a vehicle would certify to one set of regulations and test procedures and the manufacturer would submit the certification data to one central location. Not only would this save agency and manufacturer resources, but perhaps more importantly, it would ensure a single, consistent format for data. ARB and EPA could divide certification between the agencies such that only one agency certifies a system or standard (e.g., on-board diagnostic system, exhaust emission control system, evaporative emission control system, etc.). This would free agency and automaker resources, allow for a more thorough, focused, and timely certification process, and generally eliminate duplicative requirements, all while allowing both CARB and EPA immediate access to certification documentation and improving the environmental benefits provided by clean new vehicles. With this rule ARB could take the first step toward establishing single-point certification.

Again, we encourage ARB to reconsider and adopt a "deemed to comply" provision. We note that the "deemed to comply" provision was an important factor in the EPA's decision to issue a waiver under the Phase 1 rule. We would be glad to work with ARB and EPA to ensure a harmonized, robust, and timely certification process.

b. **Glider Vehicles, Engines, and Kits**: The proposed regulations align ARB glider vehicle, engine, and kit regulations with the final federal Phase 2 regulations adopted by U.S. EPA on October 25, 2016. These requirements include emission standards and other requirements for heavy-duty glider vehicles, glider engines, and glider kits.

EPA issued a Notice of Proposed Rulemaking (NPRM) on November 9, 2017 to repeal the glider regulations. To justify the NPRM repeal, EPA suggests it does not have the authority under the Clean Air Act to regulate glider engines, vehicles, or kits. We disagree. Repealing the glider regulations would upend decades of established Clean Air Act precedent, run contrary to other efforts to promote low on-road emissions, and place new vehicle manufacturers at a competitive disadvantage to glider manufacturers.

We oppose EPA's NPRM and urged EPA to consider several regulatory alternatives.[8] We support ARB's proposed regulations adopting EPA's October 25, 2016, HDV GHG Phase 2 requirements for glider vehicles, engines, and kits. If EPA finalizes rules repealing or modifying the glider regulations, the Alliance and our members will work with ARB staff to develop appropriate requirements.

2. Specific Regulatory Changes:

a. **Advanced Technology Credit (ATC) Multipliers**: The federal and California HDV GHG Phase 2 regulations, like the LDV GHG regulations, contain multipliers for the production of advanced technology vehicles such as FCEV, BEV, and PHEV. However, the California

[8] See Alliance of Automobile Manufacturers letter, *RE: Docket ID No. EPA-HQ-OAR-2014-0827; comments submitted electronically at http://www.regulations.gov*, January 5, 2018,

provisions to 40CFR §86.1819-14(k)(7) and 40CFR §1037.150(p) in the Proposed Test Procedures[9] diverge from the Federal GHG Phase 2 regulations on ATCs in two important ways.

i. Eliminates ATC Multipliers: The California Provisions to 40CFR §86.1819-14(k)(7) and 40CFR §1037.150(p) prohibit ATC credit multipliers if ARB requires the production of the vehicles in another regulation. For example, if ARB adopted a ZEV mandate for HDVs, this provision would immediately eliminate the incentive for producing a ZEV. This is unreasonable for several reasons:

   (a) The ISOR states that California's program will be harmonized with the federal program, that manufacturers should be able to comply with a single fleet of compliant vehicles, and that "the California changes are aimed at ensuring the emission benefits of the federal program are achieved in practice, rather than achieving additional emission reductions."[10] Eliminating ATC multipliers is inconsistent with all of these stated goals, as it effectively increases the stringency of the California program relative to the federal program. The California program will be more stringent because manufacturers will have to produce more advanced technology vehicles, which will require substantial additional time and resources.

   (b) Regardless of any other requirements, ARB should do everything possible to encourage and incentivize advanced technology vehicles. Indeed, the ISOR states that one of the goals of the California differences is to preserve the benefits of California incentive programs, and encourage manufacturers to bring low-emission technologies to market. However, manufacturers develop product plans for HDV years in advance and this provision adds a great deal of uncertainty and actually discourages the production of FCEVs, BEVs, and PHEVs by eliminating a regulatory incentive designed to encourage these technologies. As a result, ARB's proposal will add cost to manufacturers and delay or threaten emission benefits to California under its current programs.

   (c) This is entirely inconsistent with the LDV GHG regulations, which provide a GHG multiplier even though a ZEV regulation also requires ZEVs. ARB should maintain the ATC multipliers for all ATVs, regardless of whether required by a HDV ZEV mandate or any other type of regulation. Compared to light-duty, heavy-duty ATV technology is not nearly as far along, will require higher costs (e.g., much bigger battery packs), and present unique and greater challenges in terms of

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[9] See ARB, *Appendix B1, Phase 2 Greenhouse Gas Amendments to California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles,* https://www.arb.ca.gov/regact/2018/phase2/appb1.pdf accessed January 12, 2018.

[10] ARB, *Proposed California Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines and Vehicles and Proposed Amendments to the Tractor-Trailer GHG Regulation, Staff Report: Initial Statement of Reasons,* December 19, 2017, page IV-1

usage requirements and market acceptance. Thus, it is very important that the full benefit of ATC multipliers apply for heavy-duty vehicles.

We recommend deleting the highlighted sentence below in the California provisions to 40CFR §86.1819-14(k)(7) and 40CFR §1037.150(p).

If you generate credits from model year 2027 and earlier Phase 2 vehicles certified with advanced technology, you may multiply these credits by 3.5 for plug-in hybrid electric vehicles (PHEVs), 4.5 for electric vehicles, and 5.5 for fuel cell vehicles, unless you are required to produce the advanced technology vehicle by another ARB regulation. If you are required to produce the advanced technology vehicle by another ARB regulation, you may not multiply the credits generated by those vehicles by the advanced technology credit (ATC) multipliers listed above. The Phase 2 ATC multiplier of 3.5 for PHEVs, inclusive of PHEVs with electric power take-off (ePTO), is applicable only if the PHEV complies with both subparagraphs (k)(7)(ii)(A) and (B) of this section:[11]

ii. Minimum Range: The proposed ARB Test Procedures also establish a minimum AER for PHEVs receiving advanced technology credit (ATC) multipliers. In general, we do not think this requirement is necessary or beneficial and it certainly adds complexity when trying to comply with both California and federal GHG requirements. Nonetheless, the chart and footnotes (copied below) are somewhat confusing. For example:

Phase 2 Plug-in Hybrid Electric Vehicles All-Electric Range Requirements and ATC Multipliers

Vehicle Model Year	AER (miles)		ATC Multiplier
	Slow-Charge(1)	Fast-Charge(2)	
2017 - 2020	0	0	1.5 (Phase 1)
2021 - 2023	10+	10+	3.5(3)
2024 - 2026	20+	15+	3.5(3)
2027+	35+	20+	3.5(3)

Notes:
(1) Slow-charge refers to Level 1 and Level 2 chargers with electrical circuit rated up to 240 volts AC, up to 80 amps, and 19.2 kilowatts.
(2) Fast-charge compatible PHEVs must: 1) be capable of charging from 15 percent state-of-charge to 85 percent state-of-charge within one-half hour (0.5hr); and 2) demonstrate that typical operating time is at least 8 times (8x) typical charging time (i.e., a vehicle must be capable of operating for 8 minutes for each minute of charge time).
(3) If the PHEV AER is less than that specified in the AER column for the respective vehicle model year, an ATC multiplier of 1.5 would be applicable if the PHEV complies only with subparagraph (k)(7)(ii)(A) of this section.

(a) In footnote 2, how does a manufacturer determine "typical operating time" to qualify for the Fast-Charge? Is typical operation at idle, city driving, highway speeds, max payload, towing max load, etc.? ARB should consult with manufacturers and develop the specificity needed to provide manufacturers sufficient certainty for vehicle design, development, and certification.

[11] ARB, Appendix B1, *Phase 2 Greenhouse Gas Amendments to California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles,* https://www.arb.ca.gov/regact/2018/phase2/appb1.pdf accessed January 12, 2018, page B-1-9

(b) It is not clear if the vehicle must be slow- and fast-charge capable. We assume the minimum range is the "Slow-Charge" column, but if a vehicle is fast-charge capable, then the range shown in the "Fast-Charge" column is the minimum range.

(c) The range requirements for "Slow-Charge" jump considerably between 2026 and 2027 (75% increase in minimum slow-charge range) compared to the Fast-Charge minimum range (33% increase). Is there a reason for the difference?

(d) Finally, there has been discussion by ARB Staff about new test procedures for HDV range.[12] While we generally do not support more testing, changes to test procedures or additional testing should be closely coordinated between the manufacturers and both agencies (ARB and EPA). We are committed to working closely with ARB, EPA, other manufacturers, and other stakeholders if ARB and EPA deem new test procedures necessary. Nonetheless, new test procedures could change the values in this table – making the minimum range requirements either more difficult or less difficult to meet. ARB would need to provide sufficient lead-time and stability for any such changes.

b. **California Environmental Performance Label (CEPL)**: The CEPL for 2021 and subsequent model year MDVs[13] is a new requirement for manufacturers to install a label on complete MDVs 8,500 to 14,000 pounds gross vehicle weight rating (GVWR). The label provides a GHG score and a Smog score relative to other MDVs. While we do not believe this label is necessary because heavy-duty customers tend to base their purchase decisions on costs, capability, and durability rather than environmental considerations, we have worked closely with ARB Staff on this for the past year, and appreciate the changes made to streamline and clarify the requirements and label. Nonetheless, there are several changes still worth considering:

i. Worst Case GHG Rating (Section 4.(a)): Section 4.(a) of the proposed EPL specifies how the GHG Score is determined. As we read this, it could require the label on all vehicles in a configuration to have identical GHG scores despite potentially large differences in GHG emissions. We do not believe this is ARB's intent.

As we read section 4.(a) below, there are two possibilities for GHG data: (1) if data is available from FTP and HFET, ORANGE section applies; (2) if data is NOT available, YELLOW section applies.

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[12] See ARB Presentation, *Proposed California Phase 2 Greenhouse Gas Standards (CA Phase 2 GHG) and Potential Amendments to the Tractor-Trailer GHG*, August 31, 2017, Slides 10 and 11, https://www.arb.ca.gov/msprog/onroad/caphase2ghg/20170831_workshop_presentation.pdf, accessed January 12, 2018.

[13] See ARB, *Appendix C, Proposed California Environmental Performance Label Specifications for 2021 and Subsequent Model Year Medium-Duty Vehicles, Except Medium-Duty Passenger Vehicles*, https://www.arb.ca.gov/regact/2018/phase2/appc.pdf accessed January 12, 2018.

However, in BOTH cases, the last sentence applies, "This value must be compared to values in the Greenhouse Gas Rating table and must represent the worst-case configuration defined below." Thus, manufacturers must use the worst-case configuration (as defined) for the GHG label, regardless of the available data (either actual test data or $ADCO_2$ data).

Figure 1: ISOR Proposed EPL Regulation Section 4.(a)

4. Greenhouse Gas Rating (tailpipe only).

(a) Vehicles must be tested using the chassis dynamometer test procedures utilizing the Federal Test Procedure (FTP) for urban stop-and-go driving and Highway Fuel Economy Test cycle (HFET) for highway driving, to comply with emission standards, cited in title 17, California Code of Regulations (CCR), section 95663. The vehicle's grams of CO_2 per mile (g CO_2/mile) value is determined by the sum of the FTP vehicle testing value multiplied by 55 percent and the HFET vehicle testing value multiplied by 45 percent. Alternatively, if actual data are not available for the vehicle configurations being labeled, for the purpose of the greenhouse gas Environmental Performance Label rating only, manufacturers may determine the vehicle g CO_2/mile using Analytically Derived CO_2 ($ADCO_2$) per 40 CFR section 86.1819-14(g)(1)-(6) and (g)(8)-(9), as last amended on Oct. 25, 2016, which are incorporated by reference herein. Note for section 86.1819-14(g)(5), the downward adjustment limit of 20 percent below baseline emission rate is not applicable for the purposes of this regulation. This value must be compared to values in the Greenhouse Gas Rating table and must represent the worst-case configuration defined below.

"Worst-Case" means the complete vehicle configuration within each test group, as defined in title 40, CFR, section 86.1803.01, as last amended October 25, 2016, which is incorporated by reference herein, that generates the highest combined CO_2 value as calculated above.

We believe the intent is to provide the consumer the most accurate GHG rating based on the test data and/or calculated GHG emissions. To correct this, we recommend, revising Section 4.(a) as follows:

Figure 2: Alliance Recommended Changes to EPL Regulation Section 4.(a)

"Alternatively, if actual data are not available for the vehicle configurations being labeled, for the purpose of the greenhouse gas Environmental Performance Label rating only, manufacturers may either (1) use the worst-case complete configuration or sub-configuration defined below; or (2) determine the vehicle g CO_2/mile using Analytically Derived CO_2 ($ADCO_2$)…of this regulation. This value must be compared to values in the Greenhouse Gas Rating table ~~and must represent the worst-case configuration defined below~~.

"Worst-Case" means the complete vehicle sub-configuration (40 CFR86.1819-14(d)(12)(ii), as last amended October 25, 2016) within each test group, as defined in title 40, CFR, section 86.1803.01, as last amended October 25, 2016, which is incorporated by reference herein, that generates the highest combined CO_2 value as calculated above. Optionally, a manufacturer may choose to sub-divide the test group into label groups, with each label group having its own worst-case sub-configuration that generates the highest combined CO_2 values.

ii. Using A-J Letters for Smog and GHG Score: The regulations propose using letter "A" through letter "J" to represent the vehicle's Smog or GHG score (where "A" is the best and "J" is the worst score). We appreciate that ARB staff is trying to prevent confusion with the light-duty vehicle (LDV) Smog and GHG scores (which are numbers, 1-10). However, on the whole, we believe consumers will find the letters more confusing than numbers, and thus, recommend ARB revise this requirement to use numbers and provide appropriate caveats to distinguish a MDV from a LDV.

Using A+ to D Letters for Smog and GHG Score: More recently, ARB staff is considering assigning school letter grades (A+ to D) to the Smog and GHG Score, so the cleanest vehicle would receive an "A+", the next cleanest an "A", the third cleanest a "A-". We are concerned that consumers will view this letter grade as an endorsement by CARB of the product (e.g., "The California Air Resources Board gives this vehicle an 'A'!") based on either function or quality. This is particularly troubling when paired with the "Best" on the left-hand side. If ARB moves forward with this more recent proposal, we recommend replacing "Best" with "Cleaner." This change will more accurately reflect the fact that the score relates only to emissions performance and avoid any appearance of an endorsement.

iii. Prohibition against the sale and registration: The proposed EPL regulations prohibit the "The sale and registration in this state of any California certified new 2021 and subsequent model year medium-duty vehicles…" The manufacturers will apply the appropriate label to vehicles delivered for sale in California. However, as currently worded, the regulation could unintentionally prohibit activities. For example:

- If a customer purchased a vehicle out of state, would this prohibit the buyer from registering it in California without a label?

- If a dealer did a cross border vehicle swap (because the customer wanted a white vehicle instead of the identical red vehicle), does the regulation prohibit the dealer from making this trade without putting a label on the vehicle?

Again, we do not believe it is ARB's intent to prohibit these activities. While we do not anticipate widespread problems, we nonetheless recommend revising section 1.(a) to read:

> "1. Prohibition
>
> (a) The ~~sale and registration~~delivery for sale in this state of any California certified new 2021 and subsequent model year medium-duty vehicles…"

c. **Air Conditioning Leakage Reporting (Appendix B1)**: The Proposed HDV GHG Phase 2 test procedures require manufacturers to comply with the federal air conditioning leakage standard in subparagraph (h) of 40 CFR §86-1819-14 and 40 CFR §1037-115 even if the vehicle uses a refrigerant with a Global Warming Potential (GWP) of less than

150. This differs from the federal requirements, which do not require a leakage report for refrigerants with a GWP of less than 150.

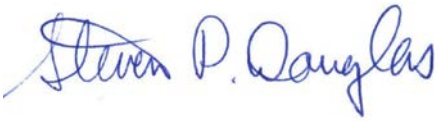
We recommend ARB follow the federal requirements in this area. The nominal GHG emissions associated with low-GWP refrigerant leakage simply does not justify the additional reporting required.

Nonetheless, if ARB goes forward with the requirement, it should clarify that manufacturers must comply with the federal air conditioning leakage standard in subparagraph (h) of either 40 CFR §86-1819-14 and 40 CFR §1037-115 only for that portion of the system installed by that manufacturer. For example, some manufacturers produce a "prep-package" version of vehicles with air conditioning for the cab, but connections that allow a rear air conditioning unit installed by a secondary manufacturer (e.g., recreational vehicle manufacturer). The original manufacturer would be responsible only for the air conditioning leakage of the prep-package. The secondary manufacturer would be responsible for the leakage of the complete air conditioning.

d. **California's anti-tampering provision**: The ISOR at page III-33 states: "These products are not approved by CARB to reduce emissions, but have an anti-tampering waiver to be used as a replacement or add-on part." In fact, the anti-tampering waiver is required for "modified and add-on parts," not replacement parts. We believe CARB mistakenly stated the law and request CARB clarify this statement in its final statement of reasons.

Again, we appreciate the opportunity to provide our comments and look forward to working with ARB on implementation and future regulations.

Sincerely,



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