

The Alliance for Automotive Innovation and our members provide the comments below on the Advanced Clean Cars II (ACC II) regulatory proposals¹ on criteria emissions.

We largely support the changes to these regulations which provide better control of cold-start emissions associated with quick drive-off, intermediate soak, and plug-in hybrid electric vehicle (PHEV) high-powered cold starts. Additionally, by removing ZEVs from the NMOG+NO_x fleet average requirements, the regulations will reduce the effective fleet average emissions by about 80% (from 30 to 6 mg/mile).

CARB also reformatted the Criteria Exhaust regulations in 13 CCR §1961.4. We appreciate the thought that went into the reformatting and believe the update will improve the useability and readability of the regulations. Despite the review and development of these, there will undoubtedly be minor technical corrections needed as automakers and the agencies review and implement the regulations.

Finally, we sincerely appreciate the time that CARB staff took to work with stakeholders to explain the goals and listen to input and suggestions. The following comments contain specific changes to the regulations that streamline and improve the regulations.

***NOTE that when drafting these comments, Auto Innovators did not have the newly formatted regulations in §1961.4 mentioned above. Thus, these comments refer to the ISOR issued §1961.4. However, they should be equally applicable to the newly formatted regulations.

1. §1961.4, Criteria Exhaust Regulations

a. (c)(1)(A) Footnote 2, High-Altitude Requirements

This footnote provides the 150k high-altitude standards. Generally, the air density at altitude impacts stability and repeatability and relief is needed in the form of proportionally higher standards for the very low bins. This would provide a consistent proportionality.

¹ "CARB's regulatory proposals" include the documents contained in the Public Hearing Notice and Related Material posted on April 12, 2022, at <https://ww2.arb.ca.gov/rulemaking/2022/advanced-clean-cars-ii>

We recommend setting a flat 2x high-altitude standard below SULEV 30. We realize this is inconsistent with EPA standards for Bin 20 (which is 30 mg/mile). However, virtually no vehicles have certified to Bin 20, and we believe the stability and repeatability issues associated high-altitude testing justify the 2x standards. We intend to propose this standard to U.S. EPA in their upcoming Tier 4 (or Multi-Pollutant rule).

b. [\(c\)\(2\)\(C\) Alternative Phase-in for 1 mg/mile FTP PM Standard](#)

The existing LEV III regulations and LEV IV regulations require manufacturers to phase in the 1 mg/mile PM Standards 2025 to 2028 model year (25%, 50%, 75%, and 100%). The LEV III regulations also provided an alternative phase in that allowed a manufacturer to count vehicles produced “A manufacturer may add vehicles introduced before 2025 model year (e.g., the percent of vehicle introduced in 2024 would be multiplied by 4) to the cumulative total.” Thus, a manufacturer could earn credit for 2022, 2023, and 2024 model years.

The LEV IV regulations change this such that only 2024 model year vehicles count in the alternative phase in. We understand that going forward, CARB intends to only allow phase-in one year before and one year after the scheduled, but the LEV IV regulation should not retroactively change the LEV III regulation.

We recommend adding the highlighted, “A manufacturer may add vehicles **introduced before or** in the 2024 model year...”

c. [\(c\)\(9\)\(C\), SC03 Stand-Alone Exhaust Standards](#)

Under LEV III most OEMs used a composite SFTP standard which weighted emissions from the FTP, US06, and SC03. The other option was stand-alone standards with limits for each test cycle. The LEV IV regulations eliminate the option for the composite standard and instead set stand-alone standards. For US06, the regulations provide a short phase-in so that a manufacturer can phase in the requirements. However, the SC03 test does not provide a phase-in, meaning 100% of vehicles must meet the SC03 standard in 2026 model year.

We recommend adding a phase-in for SC03 stand-alone standards at 25/50/75/100% starting in 2026 model year. This will also require establishing interim standards for the phase-in period and an alternative phase-in, since those are not provided in LEV IV.

d. [\(c\)\(10\) High Power Cold Start \(HPCS\) Exemption](#)

Plug-in hybrid electric vehicles (PHEVs) that can meet the US06 requirements in 13 CCR 1962.4 are exempt from the HPCS requirements, since the engine doesn't start under load during the US06. However, as worded the PHEV is required to meet all of the criteria under §1962.4(e)(1)(A) and (B). This would incorporate a lot of requirements that have nothing to do with HPCS.

We recommend limiting this to just meeting the US06 requirements in §1962.4(e)(1)(A) and (B) by modifying this to read, "2026 and subsequent model year plug-in hybrid electric vehicles that meet **the US06 range** criteria in Section 1962.4(e)(1)(A). For 2026 through 2028 model year plug-in hybrid electric vehicles that **meet the criteria in section 1962.4 (e)(1)(B) and** have a US06 all-electric range of at least 10 miles are also exempt from this requirement"

2. Appendix B-2: 2026 and Subsequent Criteria Exhaust Pollutant Proposed Test Procedures

a. Part I, G.2.2.2. Typo 9 Test Groups

This should be "...unless the manufacturer produces less than **nine three** test groups..."

b. Part II, B.9.1.4.3 Refueling and Typo

This section allows repeated partial soak test cycles. However, it does not provide an opportunity to refuel. We recommend adding an allowance for a refueling if tank level drops below 20%.

There appears to be a typo, and it should refer to B.9.1.4.1.4

c. Part II, I.8.2.4.1.2

For the first 7 seconds of the quick-drive off test, we recommend adding a speed tolerance of 0.3 miles/hour. This will ensure the vehicle is fully stopped during the shift and avoid transients. 0.3 miles/hour is within the typical tolerance of dynos.

3. Appendix B-9, 2026 and subsequent ZEV and PHEV Test Procedures

a. E.2.6.3, End of Dyno Run on US06 Test

We recommend stopping the US06 Testing when the vehicle reaches 40 miles (after 5 US06 cycles). The criteria for meeting the PHEV minimum US06 range is 40 miles, and

no additional credit is awarded for greater US06 mileage. However, there are real risks of invalidating tests and reducing test throughput with continuing the drive cycle until the battery is dead. Any number of mishaps (power outage, driver fatigue, etc.) could invalidate the test and ruin an otherwise valid US06 cycle.

b. [“Continuous US06 Test Schedule” Definition](#)

If CARB Staff does not accept our recommendation above to end the US06 test after 40 miles (5 US06 drive cycles), then this definition should be revised to allow a 30-minute key-off period for the driver as the test procedure provides for in the “Continuous Highway Test Cycle” definition.

4. [2026 and Subsequent Evaporative Test Procedures](#)

a. [14.2, Minimum Canister Size for Vehicles with > 10 inches water tank pressure during running loss](#)

This provision specifies a minimum canister size for specific vehicles to avoid “puff emissions” when the refueling cap is removed. Automakers worked cooperatively with ARB to develop this equation and agree except for the 1.2 constant that is used to account for canister aging. Automakers do not believe this 1.2 factor is necessary. Specifically:

1. Loss of EPA butane working capacity doesn’t reflect a loss of canister capacity using gasoline.
2. Data from EPA studies were probably based on conventional evaporative canisters, which wouldn’t reflect the vastly higher purge volume between loading associated with NIRCOS.
3. Industry continues to improve canister designs and have worked to reduce capacity degradation as shown in the table below.

We shared the following data during our discussions:

Working Capacity Deterioration

Canister type	Vehicle type	Butane Working capacity Deterioration	Gasoline Working capacity Deterioration
A(NIRCO)	Small HEV	7.8%	3.8%
B(NIRCO)	Mid HEV	12.6%	0.9%
C(NIRCO)	Large HEV	16.0%	0.5%
D(non-NIRCO)	conventional	5.6%	0.0%
E(non-NIRCO)	conventional	10.6%	0.0%
F(NIRCO)	Large HEV	15.9%	2.3%
Average	-	11.4%	1.3%

Note : Deterioration rate after gasoline 210cycle aging (certification condition)

Automakers do not expect any breakthrough during gasoline refueling with aged canisters sized according to the original equation. We do not believe the 1.2 factor is necessary and its inclusion could raise hardware and packaging concerns.

We recommend eliminating this factor.