

The following comments refer to proposed changes in the 4-Aug-2015, Initial Statement of Reasons, Appendix A, Proposed Regulation Order, §1968.2.

Reference	Issues	Recommendation
<p>(c) “Emissions neutral default action” Definition ¶ (3) (page 6):</p> <p><i>“(3) the compensating control action or default mode of operation remains activated for the remainder of the driving cycle. If the emissions neutral diagnostic and emissions neutral default action in the worst case take more than 10 seconds (from engine start or the first effect of the monitored system or component in the driving cycle) to detect the associated malfunction and completely achieve the emissions-neutral state, it must remain activated across driving cycles until: (a) the diagnostic that activated it has run and determined that a malfunction is no longer present or (b) the fault has been cleared with an external diagnostic tool,”</i></p>	<p>Industry is concerned that 10 seconds is insufficient time to detect a malfunction and trigger the emissions neutral default action.</p>	<p>We recommend extending the time to 30 seconds to detect and trigger the emissions neutral default action.</p>
<p>(c) “Emissions neutral default action” Definition ¶ (5) (page 6):</p> <p><i>“(5) if the default mode of operation prevents propulsion of the vehicle (e.g., no start condition, stuck in park condition), it is not activated by a non-transmission diagnostic for a component or system that is specifically named in section (e)(15) or (f)(15).”</i></p>	<p>(1) If a vehicle loses propulsion, it should be considered in an emissions neutral default action, regardless of whether the loss of propulsion is caused by a non-transmission diagnostic.</p> <p>(2) “specifically named” is not defined or its meaning is unclear.</p>	<p>We recommend deleting the highlighted section to the left.</p>
<p>(c) “Safety-only component or system” definition (page 12)</p> <p><i>“Safety-only component or system” refers to a component or system that is designed and intended to be used by the vehicle solely to prevent or mitigate personal injury to the vehicle occupant(s), pedestrians, and/or service technicians. Examples include traction control systems, anti-lock braking systems, hybrid high voltage containment systems, and lane departure control systems.”</i></p>	<p>It would help clarify the term “hybrid high voltage containment systems” if examples were provided.</p>	<p>Recommend revising to add examples, “...hybrid high voltage containment systems (e.g., high voltage interlock loop or high voltage isolation detection)...”</p>

Reference	Issues	Recommendation
<p>(c) Smart Device Definition (Page 12)</p> <p><i>“Smart device” refers to an electronic powertrain component or system that uses a microprocessor or microcontroller and does not meet the criteria to be classified as a “diagnostic or emission critical electronic powertrain control unit.” Devices that control transmissions or battery packs are excluded from this definition. Any component or system externally connected to the smart device shall not be considered part of the smart device unless.”</i></p>	<p>The highlighted language could mean every sensor in the powertrain control system.</p> <p>For example, engine sensors have a direct effect on trans/battery pack control, therefore this language could exclude smart devices that are used by the engine control module.</p>	<p>We recommend deleting the highlighted sentence to the left.</p>
<p>(d) (2.2.3) (page 15)</p> <p><i>“Except as provided for in section (d)(2.6), the OBD II system shall illuminate the MIL and store a pending fault code and confirmed fault code within 10 seconds to inform the vehicle operator whenever the powertrain enters a default or “limp home” mode of operation that can affect emissions or the performance of the OBD II system or in the event of a malfunction of any on-board computer(s) or smart device that can affect the performance of the OBD II system.”</i></p>	<p>There is no need to include “smart device” since these are covered in other sections of the regulation.</p>	<p>Delete the highlighted section to the left.</p>
<p>(d)(2.5.2)(F) Erasing a Cooling System Perm DTC (page 18)</p> <p><i>“(F) For 2019 and subsequent model year vehicles, for the engine cooling system monitors required to detect faults specified under sections (e)(10.2.1)(A) and (B), (e)(10.2.2)(B), (f)(11.2.1)(A) and (B), and (f)(11.2.2)(B) (e.g., thermostat monitor and ECT sensor time to closed-loop monitor), the manufacturer shall erase the permanent fault code using the criteria under section (d)(2.5.2)(A) in lieu of the criteria under section (d)(2.5.2)(B).”</i></p>	<p>The “shall” was changed from “may.” Thus, under this, all monitors other than cooling system monitors may use (d)(2.5.2)(B) criteria, but this is not allowed for cooling system monitors from 2019MY.</p>	<p>We recommend changing “shall” to “may” in this paragraph.</p>

Reference	Issues	Recommendation
<p>(d) (2.6) Exceptions to MIL and Fault Code Requirements (page 19)</p> <p><i>“(2.6.1) If the vehicle enters a default mode of operation that can affect emissions or the performance of the OBD II system, a manufacturer may request Executive Officer approval to be exempt from illuminating the MIL and storing a fault code. The Executive Officer shall approve the request upon determining that the manufacturer has submitted data and/or engineering evaluation that verify either of the following:</i></p> <p><i>(A) The default strategy (1) causes an overt indication (e.g., vehicle operation limited to idle only) such that the driver is certain to respond and have the problem corrected, (2) is not caused by a component required to be monitored by the OBD II system under sections (e) through (f), and (3) is not invoked to protect a component required to be monitored by the OBD II system under sections (e) through (f); or</i></p> <p><i>(B) The default strategy is an AECD that is properly activated due to the occurrence of conditions that have been approved by the Executive Officer.”</i></p>	<p>This section is confusing. For example, how is (A) (1) different than “emissions neutral default action”?</p> <p>(A)(2) seems circular with (e) (15) and (f) (15). What does this mean?</p> <p>Does (A)(3) mean except for comprehensive components? If it doesn’t relate to comprehensive components, what does it mean? Does it mean the system cannot protect electronic components?</p> <p>What does part (B) mean? “default strategy” and “AECD” are mutually exclusive. What does “properly activated” mean?</p>	<p>We cannot recommend a change, since it’s not clear the intent of this section. ARB staff should work with the industry to clarify this section.</p>
<p>(d)4.3.2(L) – Denominator Calculation (page 28)</p> <p><i>For 2015 and subsequent model year plug-in hybrid electric vehicles, in addition to the requirements of sections (d)(4.3.2)(K)(i) through (iii) above, the denominators for the evaporative system monitors (sections (e)(4.2.2)(A) through (C)), denominator(s) the comprehensive component input component temperature sensor rationality fault diagnostics (sections (e)(15) and (f)(15))(e.g., intake air temperature sensor, hybrid component temperature sensor), and the engine cooling system input component rationality monitors (sections (e)(10.2.2)(C) and (D) and (f)(11.2.2)(C) and (D)) and (f)(11)) shall be incremented if and only if:</i></p>	<p>No fueled engine operation required for incrementing the denominator, especially EVAP flow (e)(4.2.2)(A).</p>	<p>We recommend revising the highlighted section to read, “...(sections (e)(4.2.2)(B) through (C))...”</p>

Reference	Issues	Recommendation
<p>(d)(4.3.2)(M) Denominator EVAP high purge line (page 28/29)</p> <p><i>“(M) In addition to the requirements of section (d)(4.3.2)(B) above, the denominator(s) for the evaporative system high-load purge flow monitor (section (e)(4.2.2)(D)) shall be incremented if and only if:</i></p> <ul style="list-style-type: none"> (i) <i>The ambient temperature is greater than or equal to 40 degrees Fahrenheit during the conditions specified in section (d)(4.3.2)(B); and</i> (ii) <i>High-load purging conditions occur on two or more occasions for greater than two seconds during the driving cycle or for a cumulative time greater than or equal to ten seconds, whichever occurs first.”</i> 	<p>The second purge line monitor requires a certain purge flow through the purge valve for a reliable detection of a disconnected or blocked purge line.</p> <p>This required purge flow can only be achieved with a pressure difference between ambient and boost pressure of >200 hPa.</p> <p>Besides a minimum purge flow the monitor requires stable driving conditions (limited load and speed dynamic). These conditions need to be maintained during the entire monitoring period.</p>	<p>We recommend revising the highlighted section to indicate “...two or more occasions for greater than ten seconds during the driving cycle or for a cumulative time greater than or equal to fifty seconds, whichever occurs first. <u>For purposes of determining high-load purging conditions, the OBD II system shall consider time during boosted engine operation with a boost pressure of 200 hPa above ambient pressure.</u>”</p>

Reference	Issues	Recommendation
<p>(d)(7) Determination of Requirements for Applicable Vehicles. (page 36)</p> <p><i>“(7.2) For vehicles that are equipped with components/systems defined by any of the monitoring requirements in section (e) and components/systems defined by any of the monitoring requirements in section (f) (e.g., vehicles with gasoline lean-burn systems that utilize both gasoline and diesel emission control technologies), the manufacturer shall submit a plan to the Executive Officer for approval of the requirements in section 1968.2 (including the in-use monitor performance requirements in section (d), the monitoring requirements in sections (e) through (f) and the standardization requirements of section (g)), determined by the manufacturer to be applicable to the vehicle. Executive Officer approval shall be based on the appropriateness of the plan with respect to the components and systems on the vehicle (e.g., a spark-ignited gasoline lean-burn vehicle with a NOx adsorber and an SCR system would be monitored in accordance with the misfire monitoring requirements in section (e) for spark-ignited engines and with the NOx adsorber and SCR system monitoring requirements in section (f) for diesel engines typically equipped with the same components).”</i></p>	<p>While we agree on the intent of this section, it does not seem to accomplish the intent. Does this exclude the obvious differences between sections (e) and (f), correct? For example A/F Imbalance is required for gasoline and not diesel and CAC efficiency is required for diesel not gasoline.</p> <p>This would be better in section (e)(16) and (f)(16).</p>	<p>We recommend the following:</p> <ol style="list-style-type: none"> Delete Section (d)(7.2). Revise the proposed (e)(16.4) as follows: <p><i>“For emission control strategies-systems that are not covered under sections (e)(1) through (e)(14) (e.g., a control strategy that regulates fuel pressure gasoline particulate matter filter), Executive Officer approval shall be based on the effectiveness of the plan in detecting malfunctions. In developing this diagnostic plan, manufacturers should evaluate the corresponding requirements in sections (f)(1) through (f)(14), (e.g. (f)(9) Particulate Matter (PM) Filter Monitoring) for application to the subject emissions control strategy. This evaluation should include malfunction criteria, monitoring conditions, and MIL illumination and fault code storage requirements. that prevent the strategy from operating in its intended manner. These malfunctions include faults that inappropriately prevent or delay the activation of the emission control strategy, faults that cause the system to erroneously exit the emission control strategy, and faults where the control strategy has used up all of the adjustments or authority allowed by the manufacturer and is still unable to achieve the desired condition. The Executive Officer may waive detection of specific malfunctions upon determining that the manufacturer has submitted data and/or an engineering evaluation that demonstrate that reliable detection of the malfunction is technically infeasible or would require additional hardware.</i></p>

Reference	Issues	Recommendation
(d)(7) Determination of Requirements for Applicable Vehicles. (page 36) CONTINUED	(d)(7) Determination of Requirements for Applicable Vehicles. (page 36) CONTINUED	<p>We recommend the following:</p> <p>3. Likewise, revise the proposed (f)(16.4) as follows:</p> <p><i>For emission control strategies systems that are not covered under sections (f)(1) through (f)(13) (e.g., Direct Ozone Reduction (DOR) system)a control strategy that regulates SCR catalyst inlet temperatures within a target window, Executive Officer approval shall be based on the effectiveness of the plan in detecting malfunctions. In developing this diagnostic plan, manufacturers should evaluate the corresponding requirements in sections (e)(1) through (e)(14), (e.g. (e)(14) Direct Ozone Reduction (DOR) System Monitoring) for application to the subject emissions control strategy. This evaluation should include malfunction criteria, monitoring conditions, and MIL illumination and fault code storage requirements. that prevent the strategy from operating in its intended manner. These malfunctions include faults that inappropriately prevent or delay the activation of the emission control strategy, faults that cause the system to erroneously exit the emission control strategy, and faults where the control strategy has used up all of the adjustments or authority allowed by the manufacturer and is still unable to achieve the desired condition. The Executive Officer may waive detection of specific malfunctions upon determining that the manufacturer has submitted data and/or an engineering evaluation that demonstrate that reliable detection of the malfunction is technically infeasible. or would require additional hardware.</i></p>

Reference	Issues	Recommendation
LEV III OBD II Gasoline Thresholds (Page 38)	Currently, the OBD regulations to not contain requirements for EPA Tier 3 BIN 85 and BIN 110. Vehicles certifying to these standards will also be sold in California under the Federally Certified Vehicle provisions of §1961.2.	<u>See Attachment 4</u>
<p>(e)(4.2.8)(A)(ii) Evaporative System Monitoring (page 51/52)</p> <p><i>“(4.2.8) For vehicles subject to the requirements of section (e)(4.2.2)(A) or (e)(4.2.2)(D):</i></p> <p><i>“(A)(ii) For manufacturers subject to the requirements of section (e)(4.2.2)(D) on forced induction engines with separate low-load purge lines and high-load purge lines, if a manufacturer demonstrates that the purge mass flow through the high-load flow path is 0 percent of the total purge mass flow to the engine on the Unified cycle and less than 1 percent of the total purge mass flow to the engine on the US06 cycle, monitoring of purge flow through the high-load purge line is not required.”</i></p>	<p><i>A “0” percent cannot be demonstrated, since it would require an infinite number of tests. This should be some percentage greater than zero.</i></p> <p><i>Moreover, total purge masses are not typically measured on the Unified cycle; the FTP is more appropriate.</i></p> <p><i>Finally, 1 percent is too low on the US06. It should be something greater than 1 percent.</i></p>	<p>We recommend revising this requirement to be:</p> <p><i>“...flow path is 0 <u><number greater than 0></u> percent of the total purge mass flow to the engine on the Unified cycle-Federal Test Procedure (FTP) and less than 1 <u><number greater than 1></u> percent of the total purge mass flow to the engine on the US06 cycle,</i></p>
<p>(e)(6.2.5) Fuel System Monitoring (page 58)</p> <p><i>“(6.2.5) Manufacturers may adjust the criteria and/or limit(s) to compensate for changes in altitude, for temporary introduction of large amounts of purge vapor, or for other similar identifiable operating conditions when they occur.”</i></p>	<p>This section was removed, but it is still required. The new section (e)(6.3.5) is enable criteria only, the deleted section (e)(6.2.5) allowed adjustment of fail criteria.</p> <p>If this is a policy, then lead time and a phase-in is needed.</p>	<p>We recommend reinstating this paragraph (i.e., not deleting it).</p> <p>If this is a policy change, then we recommend a 25/50/75/100% phase in starting in 2019MY with alternative phase in.</p>
(e)(6.2.4), (e)(6.2.6), (e)(7.2.2), (e)(10.2.2), (e)(10.3.2) Time To Closed Loop (TTCL)	<u>See Attachment 2</u>	<u>See Attachment 2</u>

Reference	Issues	Recommendation
<p>(e)(8.2.4) EGR (page 66)</p> <p><i>“(e)(8.2.4) For 30 percent of 2019, 60 percent of 2020, and 100 percent of 2021 and subsequent model year gasoline vehicles in which no failure or deterioration of the EGR system that causes an increase in flow could result in a vehicle’s emissions exceeding the thresholds specified in section (e)(8.2.2), the OBD II system shall detect a malfunction when either the EGR system has reached its control limits such that it cannot reduce EGR flow to achieve the commanded flow rate or, for non-feedback controlled EGR systems, the EGR system has maximum detectable EGR flow when little or no EGR flow is expected.”</i></p>	<p><i>Regarding EGR high flow functional monitor, we recommend exempting monitoring if EGR open failure that causes the vehicle to stall, similar exemption for the PCV monitoring requirement in <u>proposed</u> (e)(9.2.3)(B).</i></p>	<p>We recommend adding the following sentence to the end of (e)(8.2.4):</p> <p><u>“Manufacturers are not required to detect the malfunction if it causes the vehicle to stall immediately during idle operation.”</u></p>

Reference	Issues	Recommendation
<p>(e)(9) Positive Crankcase Ventilation (PCV) System Monitoring and (f)(10.2.3) Diesel Crankcase Ventilation</p> <p><i>“(A) Except as provided below, the OBD II system shall detect a PCV system malfunction when any hose, tube, or line that transports crankcase vapors contains a leak equal to or greater than the smallest internal cross-sectional area of that hose, tube, or line...Additionally, PCV system hoses, tubes, or lines that do not transport crankcase vapors but when disconnected or contains a leak equal to or greater than the smallest internal cross-sectional area of that hose, tube, or line can result in crankcase vapors escaping into the atmosphere (e.g., dedicated fresh air lines) must also detect a PCV system malfunction...”</i></p>	<p>Assumption is that a boosted engine “ transports” vapors. What is the definition of transport?</p> <p>The fresh air lines on naturally aspirated (NA) engines contain crankcase air under high engine air flows and high manifold pressures (WOT). This Implies that this needs to be monitored on NA engine.</p> <p>1) CARB has previously stated that flow will only occur under infrequent (extended WOT) conditions and that monitoring was not required. What has changed?</p> <p>2) Monitoring for leaks on the fresh air line on NA engines is not feasible. Current monitoring schemes using a pressure sensor are not feasible for a hose that does not have high airflow through it, e.g. boosted engine under boost. The sensor does not see a leak, it sees a pressure drop due to airflow.</p> <p>3) The use of the word “leak” is inappropriate for this monitor. A leak can only occur in a sealed system. The crankcase is not a sealed system. Disconnect is still the appropriate term.</p>	<p><u>See Attachment 3</u></p>

Reference	Issues	Recommendation
<p>(e)(10) Engine Cooling System Monitoring (page 69/70)</p> <p><i>“(10.1.4) For vehicles that use a system other than the cooling system and ECT sensor (e.g., oil temperature, cylinder head temperature) for an indication of engine operating temperature for emission control purposes e.g., to modify spark or fuel injection timing or quantity), the manufacturer shall submit a monitoring plan to the Executive Officer for approval. The Executive Officer shall approve the request upon determining that the manufacturer has submitted data and an engineering evaluation that demonstrate that the monitoring plan is as reliable and effective as the monitoring required for the engine cooling system under section (e)(10).”</i></p> <p><i>“(10.2.1)(D) For monitoring of malfunctions under section (e)(10.2.1)(A), with Executive Officer approval, a manufacturer may use alternate malfunction criteria and/or monitoring conditions...”</i></p>	<p>Section (10.1.4) is not clear, since the use of ECT and other temperature sensors are not mutually exclusive. Does this paragraph apply to vehicles that have an ECT sensor? This comment also applies to Section (f)(11.1.4)</p> <p>(10.2.1)(D) This section applies to (10.2.1)(A); however, a similar section is needed for (10.2.1)(B)</p> <p>If this is a policy, then lead time and a phase-in is needed.</p>	<p>We recommend clarifying Sections (e)(10.1.4) and (f)(11.1.4).</p> <p>Additionally, we recommend adding a section similar to (10.2.1)(D) that will apply to (10.2.1)(B).</p> <p>If this is a policy change, then we recommend a 25/50/75/100% phase in starting in 2019MY with alternative phase in.</p>
<p>(15) Comprehensive Component Monitoring (Page 79)</p> <p><i>“(15.1.1) ...malfunction any electronic powertrain component/system not otherwise described in sections (e)(1) through (e)(14) that either provides input to (directly or indirectly) or receives commands from an on-board computer or smart device, and...”</i></p> <p><i>“(15.1.1) ...If the vehicle compensates or adjusts for deterioration or malfunction of the component/system, manufacturers are subject to the default action requirements of section (d)(2.2.3) or (e)(15.4.4) as applicable.”</i></p> <p><i>(15.1.2) ...can affect emissions when operating without any control system compensation or adjustment for deterioration or malfunction based on the criteria in...”</i></p>	<p>(15.1.1) No need to mention smart devices. Smart device rules are spelled out in subsequent sections.</p> <p>(15.1.1) It is not clear what this means or what it adds. If the vehicle does not “compensate”, are (d)(2.2.3) and (e)(15.4.4) no longer applicable?</p> <p>(15.1.2) Again, it is not clear why “compensation” matters and what this means?</p>	<p>(15.1.1) We recommending deleting “or smart device” in this section.</p> <p>(15.1.1) and (15.1.2) We recommend ARB staff revise and clarify these sections.</p>

Reference	Issues	Recommendation
<p>(e)(15.1.6) Comprehensive components – hybrid requirements (page 82)</p> <p><i>“For 2019 and subsequent model year mild hybrid electric, strong hybrid electric, and plug-in hybrid electric vehicles, manufacturers are subject to the applicable requirements specified in (e)(15.2.3).”</i></p>	<p>It is still unclear whether hybrid components need to be monitored unconditionally according to the requirements described in chapter (15.2.3) or if there is still the possibility for testing out in case of no emission influence.</p> <p>In the past manufacturers have not been able to test out of monitoring active battery cooling or regen braking performance even when they had data showing no emissions impact.</p>	<p><i>We recommend the following change to Section (e)(15.1.6)</i></p> <p><i>“For 2019 and subsequent model year mild hybrid electric, strong hybrid electric, and plug-in hybrid electric vehicles , manufacturers are subject <u>to monitor all components/systems specified in (e)(15.2.3) that affect emissions or are used as part of the diagnostic strategy for any other monitored system or component with</u> the applicable requirements specified in (e)(15.2.3).”</i></p>

Reference	Issues	Recommendation
<p>Comprehensive Component Changes to 15.2.1(B) (page 83)</p> <p><i>“(ii) For all other inputs: component circuit and out of range faults shall be separately detected and store different fault codes for each distinct malfunction (e.g., out-of-range low, out-of-range high, open circuit, shorted high, shorted low, etc.).”</i></p>	<p><i>1) This new requirement does not improve diagnostics. OORH/L will always include shorted and open failure modes. This has been CARB policy for 20 years. Circuit codes are pulled in, where possible, to include OOR High and OOR Low.</i></p> <p><i>2) Requirement adds more complexity (2 new DTCs) with no benefit to air quality or repair effectiveness/efficiency.</i></p> <p><i>3) Requires manufacturers to add hundreds of new tests to their software, requires SAE to retroactively assign hundreds of new DTCs.</i></p> <p><i>4) Existing SAE J2012 DTCs do not support this requirement. J2012 is running short of DTCs. Adding 2 additional DTCs exacerbates this issue. J2012 supports the following DTC structure for inputs and for outputs. It does not distinguish between OOR and “Circuit” codes.</i></p>	<p>We recommend deleting the requirement for separate DTCs for shorted circuits.</p> <p>Industry will develop SAE J2012 usage notes with examples (barometric pressure and intake air temperature), and automakers who want to add shorted high or shorted low can do so with manufacturer specific DTCs.</p>

Reference	Issues	Recommendation
<p>(15) Comprehensive Component Monitoring (page 83/84)</p> <p><i>“(15.2.1)(D) For input components that are directly or indirectly used for any emission control strategies that are not covered under sections (e)(1) through (e)(14) (e.g., fuel rail pressure sensor used for a control strategy that regulates fuel pressure), the OBD II system shall detect rationality...”</i></p>	<p>It is not clear how ARB defines “an emission control strategy,” what emissions related inputs are not “directly or indirectly” part of an “emissions control strategy”.</p> <p>Industry prefers the traditional approach where ARB decides and writes specific requirements. For example: idle control or hybrid.</p> <p>Ditto for (15.2.2)(C). Otherwise, the standard comprehensive component requirements apply.</p>	<p>We recommend against using this type of broad and unclear requirement. Instead, we recommend ARB develop specific requirements. If ARB does implement this requirement, the terms should be clearly defined.</p> <p>ARB should also consider using examples to further clarify the intent.</p> <p>Finally, ARB should eliminate the fuel rail pressure sensor example, which does not seem to apply.</p>
<p>(g)(15.2.3)(A)(i) CCM Hybrid ESS State of Health (page 85)</p> <p><i>“...or (3) utilization of the ESS in movement of the vehicle (e.g. the engine cannot be started, the motor is unable to move the vehicle or provide motor assist due to ESS deterioration).”</i></p>	<p>An Energy Storage System (ESS) condition resulting in performance deterioration may be recoverable. Criteria (3) should only apply if the condition is not recoverable.</p>	<p>We recommend revising this to specify “...any condition resulting in to ESS deterioration that is not recoverable.”</p>
<p>(g)(15.2.3)(A)(iii) CCM ESS Cell Balancing (page 85)</p> <p><i>“(iii) The OBD II system shall monitor the ESS cell balancing system for proper functional response to computer commands. The OBD II system shall detect a malfunction when the ESS cell balancing system can no longer maintain the individual cell voltages desired. In lieu of monitoring individual cell voltages, manufacturers may monitor the individual switches used to command cell balancing for proper functional response. If the OBD II system does not determine cell balance using individual cell voltages, manufacturers shall submit a plan for Executive Officer approval of the monitoring strategy, malfunction criteria, and monitoring conditions for monitoring the ESS cell balancing system. In general, the Executive Officer will approve the plan if it includes functional monitoring of components used for cell balancing.”</i></p>	<p>Cell balancing circuitry is not always used. Also, some manufacturers balance state of charge between cells rather than balancing cell voltages.</p>	<p>We recommend changes to read as follows:</p> <p><i>“(iii) The OBD II system shall monitor the ESS cell balancing system, if equipped, for proper functional response to computer commands. The OBD II system shall detect a malfunction when the ESS cell balancing system can no longer maintain the individual cell voltages desired balance ... If the OBD II system does not determine cell balance using individual cell voltages, manufacturers...”</i></p>

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<p>(e)(15.2.3)(H) CCM PHEV Components (page 87)</p> <p><i>(ii)(a): "...A fully-charged vehicle's engine to start over any of the following..."</i></p> <p><i>(iii): "...manufacturers shall submit a plan for Executive Officer approval for an alternate test cycle/vehicle operating conditions for the purposes of determining whether a malfunction would cause a fully-charged vehicle's engine to start..."</i></p>	Typo	Should be clarified to read "...would cause <u>the engine in a vehicle with a fully charged ESS</u> to start
(e) & (f)(15.4.1) Comprehensive Component Monitoring (page 89 and 159)	Typo	Sections (e) and (f)(15.4.1) both reference (15.2.3)(A)(iv), they should reference (15.2.3)(A)(v).

Reference	Issues	Recommendation
<p>(e)(15.4.3) Comprehensive components – MIL illumination (page 90)</p> <p><i>“(15.4.3) For purposes of determining the emission increase in section (e)(15.4.2)(A), the manufacturer shall request Executive Officer approval of the test cycle/vehicle operating conditions for which the emission increase will be determined. Executive Officer approval shall be granted upon determining that the manufacturer has submitted data and/or engineering evaluation that demonstrate that the testing conditions represent in-use driving conditions where emissions are likely to be most affected by the malfunctioning component. For purposes of determining whether the specified percentages in section (e)(15.4.2)(A) are exceeded, if the approved testing conditions are comprised of an emission test cycle with an exhaust emission standard, the measured increase shall be compared to a percentage of the exhaust emission standard (e.g., if the increase is equal to or more than 15 percent of the exhaust emission standard for that test cycle). If the approved testing conditions are comprised of a test cycle or vehicle operating condition that does not have an exhaust emission standard, the measured increase shall be calculated as a percentage of the baseline test (e.g., if the increase from a back-to-back test sequence between normal and malfunctioning condition is equal to or more than 15 percent of the baseline test results from the normal condition).”</i></p>	<p>As drafted, the OBD regulations would specify different criteria for LEV II and for LEV III vehicles. We recommend harmonizing the LEV II and LEV III requirements, particularly given the very extensive testing that must be performed to meet the test out criteria (for either the old LEV II test out criteria, or the new LEV III test out criteria).</p>	<p>Previously approved Test Out LEV II test groups. If a LEV II vehicle has previously received an exception to monitoring, we recommend allowing this exception to be carried over since the manufacturer has already conducted the testing and engineering evaluation necessary to obtain ARB approval. We recommend adding a new paragraph (e)(15.1.2)(F) reading:</p> <p><u>“(e)(15.1.2) (F) Manufacturers are not required to determine or provide emission data required in Section (15.1.2)(A) above for a non-Low Emission Vehicle III application carried-over from a 2016 or earlier Model Year vehicle with a component/system that the manufacturer previously determined, with Executive Officer approval, does not effect emissions under any reasonable in-use driving cycle.”</u></p> <p>For New Test Out LEV II Test Groups: Allow manufacturers to optionally use the test out criteria in Section (e)(15.1.2)(A) and (B).</p>
<p>(f)(1) Non-Methane Hydrocarbon (NMHC) Converting Catalyst Monitoring (page 99)</p> <p><i>“(1.2.3)(B) ...for catalysts used to generate a feedgas constituency to assist SCR systems (e.g., to increase NO2 concentration upstream of an SCR system), the OBD II system shall detect a malfunction when the catalyst is unable to generate the necessary feedgas constituents for proper SCR system operation...”</i></p>	<p>For LEV III vehicles that are held to combined (NMOG+NOx) OBD thresholds, this requirement is obsolete. Any impact the loss of DOC efficiency has on tailpipe NOx via NO₂ make, or any other effect, is accounted for by the combined threshold. This was not the case for LEV II vehicles.</p>	<p>Recommend deleting this requirement for vehicles meeting the combined NMOG+NOx standard (all LEV III vehicles and possibly some LEV II vehicles)</p>

Reference	Issues	Recommendation
<p>(f)(3.3.3)(D) Diesel Misfire (page 109)</p> <p>According to chapter (17.3) of the gasoline and diesel OBD regulation manufacturers may request to disable system monitors below 20°F AAT. Within the gasoline misfire regulation this general exemption is extended to maintain the disablement until ECT exceeds 70°F (see (e)(3.3.4)(B)).</p>	<p>This exemption clause has not been added to the diesel misfire regulation. At cold temperatures engine roughness might be significantly higher than on a warm engine. This can lead to false misfire detections. This risk of false detections is still very high even when engine coolant temperature exceeds 20°F, because engine oil temperature is increasing slower. Due to this, gasoline misfire chapter (e)(3.3.4)(B) allows to continue disablement until engine coolant temperature exceeds 70°F. Recommend adding this exemption to the diesel misfire monitoring in Section (f)(3.3.3).</p>	<p>We recommend adding this exemption to the diesel misfire monitoring in Section (f)(3.3.3).</p>
<p>(f)(9) Particulate Matter (PM) Filter Monitoring (9.2.4) Catalyzed PM Filter (page 135)</p> <p>“(A) NMHC conversion: ...</p> <p>(i) The OBD II system shall monitor the catalyst function of the PM filter and detect a malfunction when the NMHC conversion capability decreases to the point that NMHC emissions exceed:</p> <p>...</p> <p>b. For Low Emission Vehicle III applications, any of the applicable NMOG+NO_x, CO, or PM emission thresholds set forth in Table 2 in the beginning of section (f)”</p>	<p>Typo</p>	<p>We recommend:</p> <p>(i) The OBD II system shall monitor the catalyst function of the PM filter and detect a malfunction when the NMHC conversion capability decreases to the point that NMHC emissions exceed:</p> <p>a. For non-Low Emission Vehicle III applications, <u>that NMHC emissions exceed</u>...</p> <p>b. For Low Emission Vehicle III applications, <u>that emissions exceed</u> any...</p> <p>(ii) If no failure or deterioration of the NMHC conversion capability could result in a vehicle’s NMHC</p>

Reference	Issues	Recommendation
(g)(4.2) Data Stream Parameters (page 173)	<p>Many new data stream parameters are required to be implemented 100% in 2019MY (e.g., 4.2.2(C), 4.2.5(D)(i), 4.2.6, etc.).</p> <p>To implement these by 2019MY, OEMs must start implementing in 2017MY. This will be impossible, since some are not currently supported by SAE J1979.</p>	We recommend phasing these in 25/50/75/100% starting in 2019MY, with alternative phase in.

Reference	Issues	Recommendation
(g)(4.2) Data Stream Parameters (page 17x)	<p>Many new data stream parameters are being introduced. The regulatory structure is complicated and difficult to interpret.</p> <p>Here is the structure:</p> <p>4.2 – Data Stream</p> <p>4.2.1 – For all vehicles</p> <p>4.2.2 – For all vehicles so equipped</p> <p>4.2.3 – For all 2005 and subsequent MY vehicles using ISO 15765-4</p> <p>4.2.4 – For all 2005 and subsequent MY vehicles so equipped and using ISO 15765-4</p> <p>4.2.5 – Additionally, for all 2010 and subsequent MY vehicles with a diesel engine</p> <p>4.2.5(D) – For all engines so equipped</p> <p>4.2.5(E) – Additionally, for all 2010 and subsequent MY MDVs with a diesel engine certified on an engine dyno</p> <p>4.2.5(F) – For all 2013 and subsequent MY vehicles</p> <p>4.2.5(G) – For all 2013 and subsequent MY vehicles</p> <p>4.2.6 – For all 2019 and subsequent MY hybrid vehicles</p> <p>4.2.7 – Additionally, for vehicles required to meet the requirements of Title 13, CCR Section 1976(b)(1)(G)6., distance traveled since evap monitoring decision.</p> <p>4.2.8 –</p> <p>For purposes of the calculated load, torque, fuel rate, and modeled exhaust flow parameters in sections...</p>	<p>The distinction for each category seems to be getting lost making it difficult to interpret who needs what PID, e.g., SCR and inducement PIDs are in the “old protocol, all vehicles, so equipped” section. Addition of PID numbers in the reg would be helpful to everyone.</p> <p>We recommend, the J1979 Committee assist ARB in cleaning up the regulatory structure and adding PID numbers to the regulation.</p>

Reference	Issues	Recommendation
<p>(g)(4.2.1) Data Stream Parameters (page 173)</p> <p><i>“(C) Additionally, for 30 percent of 2019, 60 percent of 2020, and 100 percent of 2021 and subsequent model year vehicles: cylinder fuel rate, engine fuel rate, vehicle fuel rate, modeled exhaust flow (mass/time), engine reference torque, engine friction – percent torque, actual engine – percent torque, and odometer reading.”</i></p>	<p>PEMS requires \$61 Driver’s Demand Engine Percent Torque, \$62 Actual Engine Percent Torque, \$63 Engine Reference Torque, \$8E Engine Friction Percent Torque, \$9D Engine/Vehicle Fuel Rate, \$9E Engine Exhaust Flow Rate. \$A2 Cylinder Fuel Rate is required by the reg but not for PEMS.</p> <p>Odometer is not defined in J1979 yet.</p> <p>This group appears in section for “all vehicles, old protocol” section. Need CARB to confirm target applications.</p>	<p>Recommend ARB clarify that “Cylinder fuel rate” is a diesel only requirement.</p>
<p>(g)(4.2.1) Data Stream Parameters (page 175/176)</p> <p><i>“(C) Additionally, for all 2019 and subsequent model year vehicles so equipped: NOx sensor corrected.</i></p> <p><i>(D)(i) Additionally, for all 2019 and subsequent model year vehicles so equipped: diesel exhaust fluid (DEF) sensor output, DEF dosing percent duty cycle, and DEF dosing rate;</i></p> <p><i>(4.2.6) Additionally, for 2019 and subsequent model year hybrid vehicles, hybrid/EV charging state, hybrid/EV battery system voltage, and hybrid/EV battery system current.”</i></p>	<p>DEF PIDs not in balloted version of J1979. All PIDs required 100% in 2019. Needs phase-in.</p>	<p>We recommend a 25/50/75/100% phase in starting in 2019MY.</p>

Reference	Issues	Recommendation
<p>(g)(4.7.4)(A) CVN Default (page 182)</p> <p><i>“(A) Except as provided below in section (g)(4.7.4)(B), when a CVN request is received, the on-board computer may not respond with negative response codes (i.e., may not use delayed timing in sending the CVN and may not respond with a message indicating the CVN value is not currently available) and may not respond with a default value. Default value is defined as any value or space holder that is not a valid CVN value.”</i></p>	<p>Default values are still needed if there is a lack of communication between a remote module and the module providing the CVN. SAE J1979 describes data not available as follows:</p> <p>“Data Not Available: There may be a case where data is not available.</p> <p>1) CALIDs are obtained from other modules on the vehicle (e.g. a Glow Plug Control Module and an Exhaust Aftertreatment Control Module) and the other modules have not yet sent the CALID data, or the modules are not functioning, or the communications between these modules and the reporting module is not functioning. If CALID is requested in this case, the reporting module shall respond within P2 timing with either a default CALID for each missing CALID or with CALID data that was correctly received from the previous driving cycle. Default data shall replace each CALID character. Default data for CALID shall consist of \$3F [?]. Default data in dictates to a scan tool that a particular CALID is not currently available. If data is not available due to slow data transmission rates between modules, requesting the data 30 seconds after startup shall result in data that has been properly updated.</p> <p>Note: Inability to provide updated CALID information may not meet local OBD regulatory requirements.</p>	<p>We recommend allowing a default value. This will alert the technician to a problem and is more valid than a stored CVN, which could have been generated days, weeks, or months earlier.</p> <p>As an example, for an ECM and glow plug module (GPCM) that does not report directly to a scan tool, the desired behavior is as follows. It takes 15 seconds for the GPCM to calculate a CVN</p> <p><u>Everything OK:</u> Start vehicle, ask ECM for CVN. ECM reports CVN for itself and for the GPCM stored in memory from last drive cycle. After 15 seconds, ECM receives an update CVN. Any subsequent request reports the new CVN. (Negative response by ECM is not allowed other than after reprogramming.)</p> <p><u>GPCM blows fuse 5 seconds after start:</u> ECM determines that GPCM is no longer communicating. Ask ECM for CVN. ECM reports CVN for itself and default values (???????) for GPCM.</p> <p><u>Fuse gets repaired:</u> ECM determines that GPCM is communicating. Ask ECM for CVN. ECM reports CVN for itself and default values (???????) for GPCM. After 15 seconds, ECM receives an updated CVN. Any subsequent request reports the new CVN.</p>

Reference	Issues	Recommendation
<p>(g)(4.4.6) (D) (ii) Reprogramming VIN (page 183)</p> <p><i>“(B) For 30 percent of 2019, 60 percent of 2020, and 100 percent of 2021 and subsequent model year vehicles, if the VIN is reprogrammable, in conjunction with reprogramming of the VIN, the OBD II system shall erase all emission-related diagnostic information identified in section (g)(4.10.1) in all control modules that reported supported readiness for a readiness bit other than the comprehensive components readiness bit.”</i></p>	<p>If VIN is configured directly in the ECM, ECM can do an internal OBD reset/code clear after accepting a new VIN (current requirement). TCM, BECM or HPCM support only CCM. Will be problem for e.g., a diesel aftertreatment module that supports readiness. Can the OEM application software issue a code clear as part of the VIN configuration?</p> <p>If VIN gets to the ECM from another module (e.g. BCM), the ECM can do an internal OBD reset/code clear after accepting a new VIN (current requirement). TCM, BECM or HPCM support only CCM. Will be problem for diesel aftertreatment module that supports readiness. Requires complicated handshake between modules.</p> <p>This requirement appears to an attempt to prevent cheating at I/M. It can be bypassed by simply depowering the aftertreatment module. It also conflicts with (g)(4.10.2) which requires erasure of diagnostic data from all modules.</p>	<p>We recommend deleting the new requirement. The current requirement covers the vast majority of cases, and the new requirement is easily bypassed and conflicts with requirement to clear all emission data from all modules.</p>

Reference	Issues	Recommendation
<p>(g)(4.10.2) Erasure of Emission-Related Diagnostic (page 183/184)</p> <p><i>“(4.10.2) For all 2019 and subsequent model year vehicles...if any of the emission-related diagnostic information is erased as a result of a command by a scan tool, all emission-related diagnostic information from all control units shall be erased. The OBD II system may not erase a subset of the emission-related diagnostic information in response to a scan tool command (e.g., in such cases, the OBD II system may not erase only one of three stored fault codes or only information from one control unit without erasing information from the other control unit(s)).”</i></p>	<p>This requirement prohibits physical code clears. Physical code clears are routinely used during assembly plant testing and technician service procedures. Service technicians normally repair one module at a time and use a physical code clear to determine if the issue was fixed before moving on to the next module. This requirement would no longer allow that.</p> <p>This requirement appears to an attempt to prevent cheating at I/M. It can be bypassed by simply depowering the module that you don't want to clear. The real solution to cheating at I/M was implemented years ago using Permanent Codes. This new requirement simply hinders the proper servicing of vehicles.</p> <p>Requires changing software in every OBD module and therefore, a phase-in.</p>	<p>We recommend removing “all” control units as a requirement.</p> <p>If ARB does maintain this requirement, we recommend a phase in of 25/50/75/100% starting in 2019MY with alternative phase in allowed.</p>
<p>(g)(4.10.2) Erasure of Emission-Related Diagnostic (page 183/184)</p> <p><i>“(4.10.1) For purposes of section (g)(4.10), “emission-related diagnostic information” includes all the following: (A) Readiness status (section (g)(4.1)), (B) Data stream information (section (g)(4.2)) including MIL status, number of stored confirmed fault codes, distance...”</i></p>	<p>This section duplicates SAE J1979 which has the same list.</p> <p>Many people interpret “all” to mean “only the data listed,” which we don't believe was the intent.</p>	<p>We recommend removing the duplicate section from the regulation or replacing “all” with “at least all.”</p>

Reference	Issues	Recommendation
<p>(g)(4.10.2) Erasure of Emission-Related Diagnostic (page 183/184)</p> <p><i>“(4.10.2) For all 2019 and subsequent model year vehicles...if any of the emission-related diagnostic information is erased as a result of a command by a scan tool, all emission-related diagnostic information from all control units shall be erased. The OBD II system may not erase a subset of the emission-related diagnostic information in response to a scan tool command (e.g., in such cases, the OBD II system may not erase only one of three stored fault codes or only information from one control unit without erasing information from the other control unit(s)).”</i></p>	<p>No phase-in or lead time is provided</p>	<p>We recommend a 25/50/75/100% phase in starting in 2019MY with alternative phase in allowed.</p>
<p>(g) (5) In-use Performance Ratio Tracking Requirements (page 185)</p> <p><i>“(5.2.1)(B)(ii) For 2019 and subsequent model year vehicles: The numbers may not be stored in KAM and are required to be stored in NVRAM.”</i></p>	<p>Since the Ns and Ds exported in Service \$09 are the result of a calculation based on many individual diagnostic Ns and Ds (typically 5-10), this requirement will not make any sense unless all of the individual Ns and Ds are also stored in NVRAM. This will consume considerable NVRAM resources. Is there a reason for this new, NVRAM resource intensive, requirement?</p>	<p>We recommend deleting this requirement. If it is not deleted, then additional lead time and a phase-in is needed (25/50/75/100% starting in 2019MY with alternative phase in).</p>
<p>(h) Monitoring System Demonstration Requirements For Certification (page 201)</p> <p><i>(5.2.3) Exhaust emission test: The manufacturer shall operate the test vehicle over the applicable exhaust emission test. The “applicable exhaust emission test” may not include any other test cycle (e.g., preconditioning cycle) prior to running the exhaust emission test cycle...</i></p>	<p>The meaning of this sentence isn’t clear. For example, how does it fit with Section 5.1.1, Implanting a Malfunction, or Section 5.2.2, Optional Second Demonstration Test Cycle. Would the order of 5.1 and 5.2 testing matter?</p>	<p>We recommend ARB clarify this section.</p>

[illegible]

[illegible]

Reference	Issues	Recommendation

a.