BMW Group

March 7th 2012

Mr. James Goldstene
Executive Officer
California Air Resources Board
1001 I Street,
Sacramento, California 95814

Re: BMW Comments on the Proposed 15 Day Modifications LEV III and GHG Emission Standards

Dear Mr. Goldstene,

On behalf of BMW AG, BMW of North America, LLC (BMW) appreciates the opportunity to comment on the proposed 15 Day Modifications to the criteria and greenhouse gas regulations (LEV III & GHG). BMW previously submitted comments on the Advanced Clean Car Initial Statement of Reasons.

BMW has excelled in sustainability in its sector and has maintained a leadership role in striving for innovative engineering solutions. Compliance flexibility plays a key role in meeting ambitious emissions standards. Our comments focus on some areas of the regulation proposal which require stringent compliance paths and hence inhibit the flexibility to incorporate creative engineering solutions.

In the Enclosure, we address specific concerns in the proposed regulation regarding both Criteria Pollutants and GHG standards.

BMW is committed to working constructively with ARB on this matter. If you should have any questions, please contact me or Dr. Azita Khalili at (805) 271-7314.

Sincerely,

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Enclosure

LEV III and GHG Emission Standards,
BMW COMMENTS ON PROPOSED 15 DAY MODIFICATIONS TO REGULATION ORDER

- **Harmonization of Different Phase-in Requirements**

The proposed 15 day modification couples LEV III SFTP certification with that of LEV III FTP. LEV II FTP certification is phased out in MY 2019 while LEV II SFTP certification is stated to phase out in MY 2018 in the Test Procedure (page E-8) but MY 2020 in the Regulation Order (page A-10). The 15 day modification proposes an alternative phase-in for PM at 100% in MY 2021, please see below.

- **Section § 1961.2 (1) (7) (A)(1), page A-13, 15 day Regulation Order**
  SFTP NMOG+NOx and CO Exhaust Stand-Alone Emission Standards.
  The following standards are the maximum SFTP NMOG+NOx and CO exhaust emissions through full useful life from 2015 and subsequent model-year LEV III LEVs, ULEVs, and SULEVs when operating on the same ~~any~~ gaseous or liquid fuel they use for FTP certification.

- **Section § 1961 (a) (1), page A-5, 15 day Regulation Order**
  "LEV II" Exhaust Standards.
  …. 2015 – 2019 model-year LEV II LEV vehicles may be certified to the NMOG+NOx numerical values for LEV160, LEV395, or LEV630, as applicable, in subsection 1961.2(a)(1) and the corresponding NMOG+NOx numerical values in subsection 1961.2(a)(4), in lieu of the separate NMOG and NOx exhaust emission standards in this subsection (a)(1) and subsection (a)(4);

- **Test Procedures, Appendix D, page E-8**
  1.2.1 4,000-mile SFTP Exhaust Emission Standards for Light- and Medium-Duty Vehicles.
  The following standards represent the maximum SFTP exhaust emissions at 4,000 miles for 2015 through 2018 model year passenger cars, and …

- **Section § 1960.1 (r), page A-10 Regulation Order**
  4000-Mile Supplemental FTP Emission Standards.
  … The SFTP exhaust emission levels from new 2001 through 2020 ~~and subsequent~~ model low-emission vehicles, ultra-low-emission vehicles and super-ultra-low-emission vehicles in the passenger car and light-duty truck class certifying to the LEV II exhaust emission standards in section 1961.

- **Section § 1961.2 (a)(2)(D)(1), page A-11, 15 day Regulation Order**
  Alternative Phase-in Schedules for the 3 mg/mi Particulate Standard for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles. A manufacturer may use an alternative phase-in schedule to comply with the 3 mg/mi particulate standard phase-in requirements as long as equivalent PM emission reductions are achieved by the 2021 model year from passenger cars, light-duty trucks, and medium-duty passenger vehicles.

Depending on a manufacturer's product line up, the different phase-in requirements for PM, FTP, SFTP and EVAP standards could lead to an unreasonably high burden for a number of model variants near the end of the

model cycle. This affects in particular the niche models with low volumes and high development costs.

BMW recommends allowing manufacturers who meet the fleet average standards for both FTP and SFTP the option of a harmonized phase-in for LEV III FTP, SFTP and PM. This option should require 100% phase-in in MY 2021 for FTP, SFTP and PM and allow for an alternative phase-in as described in table below.

This alternative phase-in option, which is only available to OEMs who fully meet the fleet average requirements, allows OEMs to over-achieve with larger volume models in earlier years (i.e., front-load) which helps them compensate for niche models in later years. While allowing for cost optimization, this option also results in a better environmental benefit because such front-loading leads to voluntary early LEVIII compliance.

PM 0.003 g/mi; **FTP, SFTP**	**MY 2015-16**	**MY 2017**	**MY 2018**	**MY 2019**	**MY 2020**	**MY 2021**
Harmonized Phase-in Standard		**10%**	**20%**	**40%**	**70%**	**100%**
Alternative Phase-in	5x2017(or earlier) + 4x2018 + 3x2019 + 2x2020 + 2021 ≥ 490					

- **PHEV Contribution Factor to NMOG+NOx Fleet Average**

The contribution of a Plug in HEV to emission reduction is properly compensated with Zero-emission VMT Allowance through the proposed equations.
The addition of a 1.0 cap in 15 day Notice incorrectly penalizes calculation of vehicles with higher Zero-Emission VMT in the fleet average and should be omitted, see below.

- **Section § 1961.2 (b) (1) (B)(2), page A-25, 15 day Regulation Order**
  NMOG+NOx Contribution Factor for Off-vehicle Charge Capable HEVs.
  The HEV NMOG+NOx contribution factor for light-duty off-vehicle charge capable hybrid electric vehicles is calculated as follows:
  LEV160 HEV Contribution Factor = 0.160 - [(Zero-emission VMT Allowance) x 0.035]
  … Where the Zero-emission VMT Allowance for off-vehicle charge capable HEVs is determined in accordance with section C.3 of the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, … except that for the purposes of this subsection (b)(1)(B)2, the maximum allowable Zero-emission VMT Allowance that may be used in these equations is 1.0.

- **Offsetting Hydrocarbon Debits**

  - **Section § 1976 (b) (1) (G)(1)(b), page A-37, 15 day Regulation Order**
    Procedure for Offsetting Hydrocarbon Debits.
    … Additionally, …, to equalize the hydrocarbon debits that remain at the end of the three model year offset period: (1) hydrocarbon credits may be exchanged between passenger cars and light-duty trucks 6,000 pounds GVWR and under and 0-3,750 pounds LVW, and light-duty trucks 6,000 pounds GVWR and under and 3,751-5,750 pounds LVW and (2) hydrocarbon credits may be exchanged between light-duty trucks 6,001-8,500 pounds GVWR and medium-duty passenger vehicles, and medium-duty vehicles and heavy-duty vehicles.

BMW proposes to remove the limitation and allow manufacturers to offset hydrocarbon debits between all vehicle classes. This option provides manufacturers with greater compliance flexibility without adversely affecting the environmental benefits of the fleet average reductions.

- **Carry-over of 2014 MY Zero-Fuel Evaporative Emission Standards**

BMW proposes to allow carry-over of 2014 model motor vehicles through 2019 in alignment with exhaust test procedures for PZEVs.

  - **Test Procedures, Appendix F, page I-12, Section E.1.(e)(iii)**
    Carry-Over of 2014 Model-Year Evaporative Families Certified to the Zero-Fuel Evaporative Emission Standards.
    A manufacturer may carry over 2014 model motor vehicles certified to the zero-fuel (0.0 grams per test) evaporative emission standards set forth in section I.E.1.(c) through the 2018 model year and be considered compliant with the requirements of section I.E.1.(e).

- **Credits for Reduction of Air Conditioning Direct Emissions**

  - **Section § 1961.3 (a) (6) (B), page A-34, 15 day Regulation Order**
    BMW supports one common approach for CARB and EPA to obtain approval of the A/C Direct Emissions Credit. Further, because it may be difficult for manufacturers to provide adequate documentation over the vehicle design phase regarding fittings, joints and leakage for every vehicle MAC, BMW recommends that the required engineering evaluation demonstration be limited to the following:
      - the amount of the A/C Direct Emissions Credit;
      - the credit calculation; and
      - the calculation data for the MAC leakage rate.

    In our view, this information should be sufficient to confirm that the A/C system under consideration reduces A/C direct emissions.