Katherine H. Yehl
Director of Government Affairs North America
Volvo Car Corporation
House of Sweden
2900 K Street NW Suite 502
Washington DC 20007-5118
Telephone: 202-536-1607
kyehl@volvocars.com

January 25, 2012

The Clerk
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Subject: Volvo Car Corporation Comments on California's Clean Cars Package

Volvo Car Corporation (VCC) appreciates the opportunity to submit comments in response to California's proposed California's Clean Cars Package.

VCC supports the comments filed by the Alliance of Automobile Manufacturers (Alliance). VCC appreciates CARB staff efforts to engage the auto industry during the development of these regulations. VCC looks forward to continuing to work with CARB and would be pleased to discuss our comments in further detail with you or members of your staff.

If you need any additional information or have any questions, please do not hesitate to contact me. My contact information (including business address, telephone number, and email address) appears on the letterhead above.

Sincerely,

Katherine H. Yehl
Katherine H. Yehl
Director of Government Affairs North America
Volvo Car Corporation

Enclosures

Volvo Car Corporation (VCC) would like to provide its comments on California Air Resources Board's (CARB) proposed Advanced Clean Cars program. VCC supports the Advanced Clean Cars program but would like to draw attention to certain critically important issues relating to the proposed changes within LEVIII, ZEV and proposed changes in certification fuel.

VCC would like to emphasize that we appreciate the openness and transparency that has characterized CARB's development of the proposed regulations, and that this openness has been a key enabler for an intermediate manufacturer, such as VCC, to be able to make a reasonable estimation of what the future requirements may include. Similarly, we would also like to acknowledge that CARB's staff has regularly met with intermediate manufacturers regarding issues unique to this group.

VCC wants to be very clear that the proposed regulations are, and will be very challenging. One of the challenges is the pace of introduction of Advanced Technology Vehicles (ATV) to the market. CARB has been clear on what environmental needs are driving the aggressive introduction of ATVs, culminating in extraordinarily challenging requirements for Volvo as an intermediate manufacturer. We all need to recognize, however, that there is only limited ability to identify the mechanisms that will motivate tomorrow's consumers to actually purchase these highly advanced vehicles in requisite numbers, both to achieve the desired environmental impact and to provide economies of scale for smaller manufacturers.

As an intermediate manufacturer, VCC wishes to highlight some areas that are important to us.

1. GHG LEV III & National Program 2017-2025

–*Harmonization*

In the early 2000's, CARB addressed climate change in its own greenhouse gas initiative.

Then, under the direction of the Obama administration, a national plan was initiated to require EPA and NHTSA, in cooperation with CARB and other states, to develop standards for greenhouse gas and fuel consumption for the period 2012-2016 in or to achieve requirements that could coexist.

VCC's conclusion is that the agencies successfully achieved this for the 2012-2016 timeframe. For VCC, as an intermediate manufacturer, this is of great importance and we want to be clear that we value this pursuit of efficiency. It supported the critical need of smaller manufacturers to reduce administrative costs.

–*Alignment with the Federal Program*

VCC is sympathetic to the myriad environmental challenges that weigh on the agencies in trying to reach their varied goals. However, it is of *utmost importance* that all agencies, as far as possible, collaborate to achieve common understanding wherever possible. Section 1961.3 provides a good example of how CARB can achieve a common approach to technical proposals that EPA and NHTSA have identified in their pending regulatory

proposal. But such commonality is clearly lacking in other areas. Here are areas of particular concern.

- Reciprocal Recognition: The current draft does not make it clear that CARB intends to allow reciprocal recognition of the national greenhouse gas program, as was the case for model years 2012 to 2016. Technical alignment and efficiency are of utmost importance to VCC. Although CARB's actions may be somewhat constrained by the fact that a federal 2017-2025 program is not finalized, CARB's draft does not express even an optimistic intent to allow reciprocal recognition as a best-case scenario.

- At this stage of drafting, only minor differences remain between the CARB and federal proposals. CARB should acknowledge that, barring unforeseen changes, it intends to recognize the federal program as meeting CARB's own requirements.

- VCC seeks confirmation that CARB intends to make this commitment for model years 2017 through 2025.

– *Mid-term evaluation*

Mid-term evaluation will allow manufacturers and the agencies to consider whether the regulation is reasonable and on track in its assumptions. VCC supports a mid-term evaluation because it is very difficult to predict fifteen years into the future without making a vast number of assumptions. Customer acceptance, affordability (especially in light of the phase-out of many of the federal and state incentives), safety, convenience and utility should be examined in the mid-term evaluation.

It is therefore imperative that the industry and the agencies review and consider the outcomes of our work in 2012 in relation to the joint plan at the midpoint.

– *AC leakage determination*

VCC continuously develops its climate systems in order to reduce refrigerant leakage and to improve durability. VCC is convinced that physical measurements better reflect real vehicle emissions and also result in development of more robust air conditioning systems than calculations of theoretical estimates and allowances.

VCC strongly supports the Agency's intent to allow, as expressed in the draft's Appendix D, paragraph 2.5.6.3,[1] physical measurements of refrigerant leakage as an alternative to the latest version of SAE J2727.

[1] Appendix D "CALIFORNIA 2015 AND SUBSEQUENT……."
2.5.6.3 The calculation of A/C Direct Emissions Credit…. (page E-42)
Note: Initial leak rate is the rate of refrigerant leakage from a newly manufactured A/C system in grams of refrigerant per year. The Executive Officer may allow a manufacturer to use an updated version of the August 2008 version of SAE J2727 or an alternate method if s/he determines that the updated SAE J2727 or the alternate method provides more accurate estimates of the initial leak rate of A/C systems than the August 2008 version of SAE J2727 does.

2. Criteria Emissions

–*Harmonization with federal proposed Tier 3*

VCC has actively worked with CARB toward development of the next generation of criteria pollutant regulations (LEV III). VCC values the open and interactive dialog that staff has had with the industry.

During 2010, EPA revealed its views about its next generation of regulations for criteria emissions (Tier 3). There is a clear indication that EPA and CARB intend to work together in order to harmonize their common targets in some areas, but there remain several critical issues and opportunities for reduced administrative burdens on both industry and CARB.

It is of utmost importance to VCC, as an intermediate manufacturer, that the agencies achieve harmonization to the greatest possible extent. The recent economic crisis, which resulted in an unprecedented contraction of the automotive market, was extremely challenging for all automakers and downright dire for many. This difficult period demonstrated that the requisite economic wherewithal for manufacturers to invest in new and reliable industrial development processes can evaporate almost overnight. This is important to note because investment in long-term development and testing procedures and facilities will form the critical foundation for meeting future technical requirements. Challenges like the financial crisis of 2008-2009 can result in manufacturers being forced to take drastic streamlining measures.

–*PM*

CARB has chosen to broadly seek to harmonize with the EPA's upcoming Tier 3 requirements to control particulate matter (PM) from gasoline-powered vehicles. However, there remain many discrepancies between the agencies' regulatory requirements that affect manufacturers' ability to meet these very stringent particulate requirements.

Among the most important of these discrepancies are the test methods that will be selected to measure the particles now and in the future. The other critical discrepancy is that CARB and EPA have different requirements for reference fuels.

In its Tier 3 plan, EPA has proposed test methods for particulate matter based on its experience developing methods for heavy duty vehicles, Part 1065. VCC has been actively involved in addressing these issues directly with EPA and through the Alliance of Automobile Manufacturers (Alliance) on the proposal that was presented by EPA in November 2011. Through such dialogue, we have requested that EPA work closely with industry to minimize the requirements that lead to substantial investments while developing procedures that still achieve a high level of accuracy.

One very critical aspect of the requirements that are now proposed is a 3 mg/mile PM measurement standard. 3 mg/mile is on the edge of accurate and repeatable measurement capability using available techniques today. This challenge is likely to remain for the next 5 years.

It is therefore critical that these regulations do not set standards at levels that cannot be measured and that cannot be achieved with known technology. VCC recognizes that the

agencies may tighten the requirements in the future, but VCC emphasizes that this should be accomplished through continuous dialog between government and industry.

FTP LEV III PM Standard 1 mg/mile in 2025

Based on VCC knowledge of particulate matter measurement technology, it is not currently feasible to measure compliance with the 1 mg/mile standard proposed for model year 2025. VCC does not believe that setting an unattainable standard so far out in the future (2025) is realistic.

VCC supports a thorough, formal, review of PM standards, vehicle emission control technologies, test methods of today and alternative test methods for the future, but only as part of future rulemaking. After this review is complete, we would recommend CARB develop and promulgate standards for 2025.

– LEV III Phase-In Requirement

The phase-in plan for LEV III (FTP and SFTP 150K durability and E10 certification fuel) was unclear in the ISOR and in the regulatory wording. It is VCC's understanding that all PZEVs can be carried over until MY2018 and that CARB intends to require all vehicles that certify to ULEV70 and below to meet the LEV III requirements from the beginning of model year 2015.

VCC requests confirmation of CARB's intent.

– Interim In-Use Standards

For FTP, SFTP NMOG + NOx, and SFTP PM, interim in-use standards apply only through model year 2019. All of these interim in-use standards should apply through model year 2020. For interim in-use FTP PM, VCC supports CARB's planned phase-in through model year 2020.

Inconsistent phase-in periods and overly stringent ramp-ups place unwarranted burdens on intermediate manufacturers. For such manufacturers, the required ZEV volumes and the introduction of new technologies already pose disproportionate challenges. (§1961.2(a)(8), page A-48)

– Early Model Year 2014 Compliance

In the introductory paragraph and the corresponding regulatory text, there is a need for CARB to clarify its plan to allow compliance with LEV III prior to model year 2015. The regulation lacks LEV III FTP and SFTP composite fleet averages for model years 2013 and 2014. The LEV III regulations appear to require LEV II vehicles to continue to meet separate NMOG and NOx standards. (§1961.2, Page A-35)

VCC requests clarification.

–*Early Phase-in for Zero EVAP*

The proposed regulation for LEV III evaporative emissions allows manufacturers the option to certify to the zero evaporative vehicle standards using the Bleed Emissions Test Procedure instead of a "rig" test.

Manufacturers should be allowed early (model year 2014) compliance with the new evaporative emission standards consistent with the plan to allow early compliance for LEV III exhaust. (§1976(b)(1)(G), page A-131)

–*EVAP Testing During Exhaust DF Tests*

Development of deterioration factors (DF) is already an extremely resource-intensive process. The prescribed intervals (5,000, 40,000, 70,000, and 100,000 miles) also make EVAP tests very costly. Eliminating the evaporative tests would result in a significant relief to VCC. (Appendix F, Part II.A.(2.4), page II-2)

3. ZEV Mandate

VCC recommends that CARB align the following areas in the ZEV regulation with the LEV III criteria emission regulations.

- PZEV carryover from 2014 and prior model years: As written, the regulations would require manufacturers to recertify all Partial Zero Emission Vehicles (PZEVs) using the LEV III (or federal Tier 3) certification fuel and to the new SFTP emission standards.

  VCC requests a revision to the model year 2009 – 2017 ZEV Regulation §1962.1(c)(2) to allow manufacturers to carry over PZEV certification data to model year 2015 and beyond.

- Similar to VCC's abovementioned request concerning early certification to LEV III EVAP, VCC requests that equivalent changes be made to §1962.1(c)(2) to allow early certification of PZEVs to LEV III.

4. Test Procedure

VCC has put considerable time and effort into maintaining a high degree of accuracy by having well-developed arrangements to monitor calibrations, checks, and all critical processes in our emission laboratory. We work continuously to monitor and improve the correlation and repeatability of our test rooms. Thus, VCC realizes that test procedures, calibrations, and instrumentation must be regularly reviewed and renewed to meet new challenges.

In the fall of 2011 EPA proposed, under TIER 3, to consolidate all test procedure requirements of Parts 86 into Part 1066 in order to improve their organization. In doing so, some test procedures will remain as they are, some will evolve, and new ones will be introduced.

Along with the industry, VCC pointed out that close industry-EPA cooperation is critical to ensuring that test procedures are relevant to their intended purpose, adequate, and meet the objective standards of reproducibility and repeatability. The initial EPA proposal would have required enormous investment from VCC, but based on current discussions there appears to be an understanding that there are other possible ways to address measurement.

VCC has therefore been actively involved in addressing issues directly with the EPA and through the Alliance on the proposal that was presented by EPA in November 2011.

Based on VCC's ongoing analysis of Part 1066, VCC believes that these proposed processes would benefit from thorough revision, in cooperation with the industry, to minimize the risk of creating processes that will add very little value to the goals they are meant to achieve: good repeatability and accuracy. EPA has recognized industry's challenges and therefore continues to work with industry on this issue.

VCC would welcome CARB's participation in that dialog.

Currently there are crucial differences between CARB and EPA advanced technology vehicle test procedures that would benefit from harmonization.

Hybrid Test Procedures

The hybrid test procedures need to be updated to reflect a common approach between EPA and CARB. EPA extensively refers to SAE J1711 test procedures. The J1711 test procedures are the result of many years of cooperative work between industry and government, which includes EPA and CARB. If this harmonization does not occur, there will be unnecessary additional test burdens on the industry as a result of duplication of testing and uncertainty concerning the certification requirements.

Nitrous Oxide - N2O

The LEV III regulations require this N_2O measurement for the 2015 MY. Currently there is no equipment on the market that can measure N_2O with a relevant repeatability. During 2012-2013, new technology will be introduced to the market, but this technology is still in the research stage, and it would be premature to commit to its use as a certification tool at this juncture. VCC is concerned about technology readiness, instrument availability, measurement accuracy, and implementation lead time, including verifying that the instrument is robust enough for certification testing.

VCC and the Alliance addressed the same concern to EPA, which has pushed implement date of its requirement to model year 2017.

5. Fuel

–*Certification Gasoline and Harmonization*

VCC agrees that there is a need to move the reference fuel to a blend of 10% ethanol, consistent with the current and foreseeable future U.S. market. This is also consistent with fuel developments in Europe and Asia.

VCC supports a single certification fuel for EPA and CARB. It is expensive and inefficient to develop and store several different fuels to meet two nearly identical regulations.

When EPA and CARB require different fuels, it effectively doubles the amount of testing manufacturers are required to perform, while yielding limited, if any, additional environmental benefit. Even though it appears that 10% ethanol is likely to be the most common fuel on the U.S. market for the foreseeable future, it appears likely that EPA will require E15.

The consequence of this would be that CARB and EPA will have different certification gasoline requirements. To eliminate unnecessary duplicative testing, VCC is requesting that CARB accept certification using the EPA proposed fuel from MY2017.

VCC requests that CARB allow manufacturers to use the federal Tier 3 gasoline for certification to CARB standards for exhaust and evaporative emissions testing. For EVAP testing, the use of EPA temperature profiles is a necessity that must be part of this allowance.

–*Sulfur*

The same criteria that govern the need for new test procedures to measure extremely low emissions adequately and correctly also dictate the need for low-sulfur fuel. It is essential to avoid sacrificing environmental gains achieved by use of advanced technology by failing to recognize the effect of higher quality fuel or the impact of sulfur on catalyst efficiency over time. Lower sulfur in fuel will also result in environmental gains for the existing fleet since the catalyst deactivation and the need to regenerate the catalyst will be minimized.

VCC would prefer a flat 10 ppm cap instead of using the currently proposed range of 8.0-11.0. This would align with international standards, such as the current requirement in Europe.

–*RVP*

EPA's proposed Reid Vapor Pressure of 9 psi offers an opportunity to act on an achievable environmental opportunity that would positively influence on the vehicle EVAP systems. To that end, VCC would encourage EPA's harmonization with CARB's 7 psi. This is an environmental opportunity that would positively influence all vehicles nationwide.

VCC supports CARB's decision to remain at a more environmentally beneficial level of 6.9-7.2 psi.

– ***Octane number***

Higher octane fuel would enable manufacturers to pursue strategies that better support development and introduction of advance vehicle technologies, and a consequent reduction in greenhouse gases and criteria emissions.

To optimize engine fuel efficiency and minimize emissions, transitioning to higher octane regular and premium grade market gasoline may be necessary.

VCC would support establishment of a minimum blend stock octane. In this way, adding ethanol would raise fuel octane without risk that blenders would make corresponding reductions in base blend stock octane, thereby undoing the octane benefit of ethanol addition.

We recommend the Board direct staff to assess the environmental benefits of higher octane gasoline.