

Title: Four Peer Reviews in Support of EPA's Tier 3 Inventory Process

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Appendix B: Elements to be Addressed in the Charge to the Peer Reviewers

This Appendix has been divided into five sections. Each of the four sections which follow addresses individually the products for which EPA has requested an independent peer review.

This first section contains a brief discussion of concerns which apply to all reviewers across all products for peer review.

In their comments, reviewers should distinguish between recommendations for clearly defined improvements that can be readily made based on data or literature reasonably available to EPA and improvements that are more exploratory or dependent on information not readily available to EPA. Any comment should be sufficiently clear and detailed to allow a thorough understanding by EPA or other parties familiar with the analysis or the model. EPA requests that the reviewers not release the peer review materials or their comments to anyone else until the Agency makes its report and supporting documentation public.

If a reviewer has questions about what is required in order to complete this review or needs additional background material, please direct the reviewer to contact the contractor's project manager for this effort. If a reviewer has a question about the EPA peer review process itself, please have the reviewer contact Ms. Ruth Schenk in EPA's Quality Office, National Vehicle and Fuel Emissions Laboratory by phone (734-214-4017) or through e-mail at schenk.ruth@epa.gov.

Appendix B.3 DELTA Evaporative Model

(to be updated by EPA WAM; WAM will forward the file electronically to the contractor to serve as a template from which to prepare a set of directions to each reviewer regarding important aspects of this study which should be addressed in the course of the review)

EPA MOVES 2010a contains diurnal evaporative emission data empirically based on data from 1995. The equations built into MOVES are simplistically fit to this data and not based on how canisters actually respond to vapor loading. The DELTA model embodies EPA's effort to more accurately predict vehicle fleet evaporative emissions, especially in light of future vehicle rulemakings and any changes to evaporative standards that might be considered.

This report documents the assumptions, data sources, calculations and limitations used to estimate on-road vehicle evaporative emissions due to multi-day diurnal cycles using the DELTA (Diurnal Emissions Leaving To Atmosphere) model. This new model is associated with on-going improvements to the evaporative emissions portion of EPA MOVES model in conjunction with the proposed Tier 3 rulemaking.

Although the 1994 and 1996 In-Use Vehicle Program (IUVF) evaporative emission data (SHED evaporative emissions (in grams) for a large set of vehicles undergoing a single diurnal cycle) in MOVES 2010a provided a large and robust dataset for one day of emissions, a new way of modeling evaporative emissions beyond one day of diurnal cycling was needed for future vehicle

evaporative emission scenarios. Neither was using a quadratic equation to fit diurnal emission data in MOVES 2010a accurately representing the actual response of vehicle canister breakthrough to large vapor loads. In response to this need, EPA's DELTA model was developed to more accurately represent multiple-day canister loading and breakthrough of vehicle evaporative emissions. DELTA provides an updated, theoretical approach to diurnal evaporative emissions development based on the new data which EPA believes more closely matches real-world vehicle evaporative system performance.

The previous breakthrough emissions equations found in the MOVES database are being replaced with a new set of equations generated within the DELTA model. The DELTA model also introduces changes to the MOVES Java code in order to take into account the nature of multiple day diurnal cycles. These new features (including the DELTA equations) can be deactivated if running MOVES using the older evaporative model, as desired by the user.