



Multiple Peer Reviews of MOVES-related Update Reports: Final Report

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1. Introduction

The U.S. Environmental Protection Agency's (EPA) Office of Transportation and Air Quality is tasked with assessing the air quality impacts of mobile emission sources.

EPA's MOtor Vehicle Emission Simulator (MOVES) model estimates exhaust and/or evaporative emissions from light-duty vehicles, heavy-duty vehicles, and nonroad equipment. Additional information on MOVES is available on the EPA website (<https://www.epa.gov/moves>).

EPA is updating MOVES to refine the model's ability to estimate accurately the emissions impacts of motor vehicles. Several draft reports, listed below, describe proposed updates to MOVES data and methods:

- "Speciation of Total Organic Gas and Particulate Matter Emissions from On-road Vehicles in MOVES201X";
- "Air Toxic Emissions from On-road Vehicles in MOVES201X";
- "Exhaust Emission Rates for Light-Duty On-road Vehicles in MOVES201X";
- "Emission Adjustments for Temperature, Humidity, Air Conditioning, and Inspection and Maintenance for On-road Vehicles in MOVES201X";
- "Population and Activity of On-road Vehicles in MOVES201X";
- "Exhaust Emission Rates for Heavy-Duty On-road Vehicles in MOVES201X"; and
- "Fuel Supply Defaults: Regional Fuels and the Fuel Wizard in MOVES201X".

EPA has submitted these draft reports for independent peer review per specific agency protocols, to assure the use of the highest quality science in EPA's predictive assessments and to assure stakeholders that each analysis/study has been conducted in a rigorous, appropriate, and defensible way.

This technical report describes the external peer reviews of the aforementioned MOVES-related draft reports. Four peer reviews were carried out simultaneously from August to September 2017, in accordance with the current version of EPA's *Peer Review Handbook*.¹ At the conclusion of each review, ICF collected from the peer reviewers their comments on the relevant materials and their completed conflict of interest (COI) forms, and submitted them to EPA electronically.

2. Peer Review Process

ICF conducted the peer review process for the MOVES-related draft reports in three stages. First, ICF identified two qualified reviewers for each set of peer review materials. ICF then established subcontracts with the selected reviewers, facilitated the peer reviews, and collected and forwarded to EPA the reviewers' comments. In the final stage, ICF documented the peer review process by preparing this technical report. The following sections provide further detail on the first two stages.

¹ U.S. Environmental Protection Agency, *Peer Review Handbook*, 4th Edition (Oct. 2015), available at <https://www.epa.gov/osa/peer-review-handbook-4th-edition-2015>.

Task 1: Peer Reviewer Selection

To begin the peer review process, ICF first assembled peer reviewer candidates based on the list of independent subject matter experts provided by EPA. A total of 15 candidates were considered.

ICF contacted the 15 peer reviewer candidates by e-mail (and when necessary, by telephone). At all times, ICF identified itself as a contractor to EPA. In its initial e-mail, ICF provided general information on the draft report(s) to be reviewed, including the subject matter, approximate length (in pages), estimated number of hours for review and preparation of comments, and the anticipated peer review schedule. ICF requested a response that indicated the candidate's interest and availability to perform the work. ICF also asked each peer reviewer candidate to provide a resume or curriculum vitae (CV) and to disclose any actual or apparent conflict(s) of interest. Overall, this initial communication was designed to assess each potential reviewer's expertise in the field, his/her ability to perform the work during the period of performance, and any association with the work that would preclude him/her from being independent and objective.

Candidates that expressed interest in serving as a peer reviewer were evaluated for any actual or apparent conflict(s) of interest, as well as on having one or more areas of expertise to ensure a robust peer review. Ultimately, based on the results of its outreach, ICF selected two qualified, independent peer reviewers for each of the four peer reviews. ICF submitted its "List of Selected Peer Reviewers" to EPA on August 21, 2017. The list identified the following eight peer reviewers, and specified September 1 as the target start date for each peer review:

Update of Speciation & Toxic Emissions, and Particulate Matter Emissions from LDVs

- Dr. Janet Yanowitz, Ecoengineering, Inc.
- Dr. John Storey, Oak Ridge National Laboratory (ORNL)

Vehicle Population and Activity Update

- Dr. Song Bai, Sonoma Technology, Inc.
- Dr. Reza Farzaneh, Texas A&M University Transportation Institute

Heavy-Duty Emissions Update

- Dr. Arvind Thiruvengadam, West Virginia University
- Dr. Josias Zietsman, Texas A&M University Transportation Institute

Fuel Supply Report

- Dr. S. Kent Hoekman, Desert Research Institute
- Dr. Christian Lindhjem, Ramboll Environ

ICF expressed its belief that "the selected reviewers cover the topic areas well, and their combined expertise will result in robust peer reviews," and it appended to the list the selected reviewers' resumes/CVs. On August 22, 2017, EPA provided written acknowledgement that it had no disagreement with ICF's peer reviewer selections. Thereupon, ICF notified all of the reviewers of their selection.

Upon learning from Dr. John Storey of ORNL that he was no longer interested in being a peer reviewer, ICF proceeded to select an alternate. ICF informed EPA of this substitution on August 24, 2017, and EPA concurred the following day. Thus, the revised list of peer reviewers for the first peer review (Update of Speciation & Toxic Emissions, and Particulate Matter Emissions from LDVs) is as follows:

- Dr. Janet Yanowitz, Ecoengineering, Inc.
- Dr. Georgios Karavalakis, University of California at Riverside

Task 2: Facilitation of Peer Review

ICF established subcontracts with the peer reviewers and then composed charge letters for each of the four reviews based on the charge elements and questions provided by EPA. Once it had the materials required for the particular peer review, ICF distributed the charge letters, relevant peer review materials, and COI forms to the respective reviewers, along with instructions on how to complete the review and a schedule. The charge letters were distributed to the eight peer reviewers on or between August 28, 2017, and September 8, 2017. The letters specified September 25, 2017, as the due date for the reviewers' written comments and completed COI forms.

After distributing the charge letters and materials, ICF arranged and hosted teleconferences between the selected peer reviewers, EPA, and ICF staff. A total of four teleconferences (one for each peer review) took place – on August 31, September 7, and September 11, 2017. During each conference call, ICF and/or EPA provided background information on the peer review process and the particular materials being reviewed, and answered any questions the reviewers had about the peer review.

All of the peer reviewers completed their review by the September 25 deadline, with the exception of one, who submitted his materials to ICF the following day. ICF, in turn, provided the peer reviewers' comments and signed COI forms to EPA on September 25 and September 26, 2017.

3. Difficulties Encountered

ICF encountered no significant difficulties while conducting the four peer reviews.