



## **Roadside Optical Vehicle Emissions Reporter (ROVER) III PROJECT BACKGROUNDER**

- The Clean Air Strategic Alliance (CASA) is a multi-stakeholder partnership composed of representatives selected by industry, government, non-government organizations, and participating First Nations and Métis groups. This partnership uses a collaborative consensus process to develop strategies to assess and improve air quality for Albertans.
- The transportation sector is one of the largest sources of nitrogen oxides (NO<sub>x</sub>) emissions in the province, second only to industrial emissions, and it is responsible for approximately 30% of Alberta's total NO<sub>x</sub> emissions. Management of NO<sub>x</sub> emissions will be needed to support achievement of air quality objectives and standards.
- The CASA Roadside Optical Vehicle Emissions Reporter (ROVER) III Project Team was struck in 2018 and tasked with measuring emissions from the in-use on-road transportation sector in Alberta, particularly diesel-fueled trucks, to inform management actions or next steps for transportation emissions management. This project follows up on the work completed in the ROVER I and II projects which measured emissions from in-use on-road light-duty gasoline vehicles (LDGVs) in Alberta.
- Opus Inspection Inc. was contracted to collect vehicle emissions data for in-use LDGVs and heavy-duty diesel vehicles (HDDVs) using remote sensing in five municipalities (Edmonton, Calgary, Grande Prairie, Fort McMurray, and Red Deer) and select vehicle inspection stations in Alberta. The emissions of focus included nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), and particulate matter (PM).
- Roadside emissions measurements were collected in 2020 and 2022 and, where possible, these measurements were paired with vehicle characteristic data obtained from Service Alberta, such as vehicle year, model, make, and fuel type. Opus Inspection Inc. analyzed the data and provided a report with the results that is available on the CASA website.
- Results of the data collection and subsequent analysis showed that about 30% of Alberta-registered HDDVs that Opus measured had NO<sub>x</sub> emissions that were at least 10 times what is expected based on the emission control systems they should have installed. There were also high-emitters in the measured LDGVs – the top 5% LDGV high-emitters were responsible for 64% of the hydrocarbon emissions.

- The ROVER III study did not include vehicle inspections and therefore the results of the project cannot explain the cause(s) when vehicle emissions significantly exceed the expected benchmarks. The assumption made for this work was that vehicles with at least 10 times the expected emissions have emission control systems that have either been tampered with or are malfunctioning. Tampering with emission control systems is not prohibited in Alberta and may have consequences for the province's air quality and for the health of Albertans.
- There have been numerous studies on the health impacts of diesel exhaust, and evidence exists to link it to adverse health outcomes such as lung and bladder cancer, respiratory, and cardiovascular diseases. The degree of health impact from excess emissions due to tampering or malfunctioning emissions controls was not explored in this project, and it needs further study.
- The ROVER III report's recommendations are focused on gathering more information on emissions from Alberta's transportation sector to address data gaps, identifying incentives to reduce tampering and encourage regular maintenance of vehicle emission control systems, and sharing information on the impacts of tampering and malfunctioning emission control systems on air quality and health.
- One outcome of the ROVER III report recommendations was the establishment of a new project team to gather more information on the reliability of factory-installed vehicle emission controls and the magnitude of vehicle emission control tampering in the province. That group is underway, and its outcomes will support the GoA in their identification of actions and initiatives to reduce emissions from the transportation sector.

Copies of the report and more information on CASA and Roadside Optical Vehicle Emissions Reporter (ROVER) III project team can be found at <https://www.casahome.org/past-projects/roadside-optical-vehicle-emissions-reporter-iii-project-team-53/>.

*The Clean Air Strategic Alliance is a partnership composed of representatives from industry, government, First Nations, non-government organizations, and Métis Settlements. We provide strategies to assess and improve air quality for Albertans using a collaborative consensus process. Every partner is committed to a comprehensive air quality management system for Alberta.*

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