

COVID-19: Solutions to Reducing Airborne Hazards in Ground Public Transportation

Sponsor

National Research Council of Canada (NRC) and Transport Canada

For More Information

Visit the [COVID-19 Challenge website](#) [1].

Description

The ground transportation industry has experienced a steep decline in traffic as a result of the COVID-19 pandemic. Canadians feel less safe traveling in mass transportation environments given the uncertainty surrounding the risk of contracting COVID-19 and future viruses in these spaces. The NRC and TC seeks to challenge the Canadian industry to develop solutions that can be used in existing federal, provincial, and municipal buses and trains to protect onboard occupants by mitigating the airborne viral risks while restoring confidence in transportation.

Proposed retrofit solutions should reduce airborne hazards and improve air quality within the enclosed spaces encountered by bus and rail travelers in order to improve the resilience to airborne infectious diseases. The two primary interests are protecting passengers and drivers, i.e. protecting passengers on long-range transportation where wearing a mask is not practical; and protecting drivers of all ground public transportation environments.

The proposed solution must:

1. Reduce the active airborne viral load exposed to passengers inside the enclosed space of a bus or train with all seats facing in the direction of travel, such as school buses and intercity railcars.
2. Consider that an infectious individual may be at different locations inside the vehicle but without a mask worn. The intent is to replicate the worst case conditions when a passenger is not properly wearing the mask or has the mask removed for various reasons (e.g. medical condition, mask replacement, eating/drinking, freshening up, etc.).
3. Install and operate the prototype in two environments: bus and train.
4. Demonstrate the risk of acquiring SAR-CoV-2 infection via the aerosol route is at the manageable risk of 1.17×10^{-3} (Tang, et al. 2020).
5. Be able to be certified and installed in existing buses certified under Canada's Motor Vehicle Safety Regulations (Government of Canada 2021a).

6. Be able to be certified and installed in existing trains certified under Canada's Railway Safety Act (Government of Canada 2021b).
7. Not require any changes to the existing air conditioning systems for both trains and buses.
8. Ensure that carbon dioxide rate is below 1,000 ppm.
9. Not produce ozone or VOCs (volatile organic compounds).
10. Not increase electrical power consumption beyond 25 watts per person.
11. Not increase the weight by more than 1 kg per person.

Eligibility

Solution proposals can only be submitted by a **small business** that meets all of the following criteria:

- for profit
- incorporated in Canada (federally or provincially)
- 499 or fewer full-time equivalent (FTE) employees*
- research and development activities that take place in Canada
- 50% or more of its annual wages, salaries and fees are currently paid to employees and contractors who spend the majority of their time working in Canada*
- 50% or more of its FTE employees have Canada as their ordinary place of work*
- 50% or more of its senior executives (Vice President and above) have Canada as their principal residence*

* Calculations must take into account and include affiliated businesses, such as parent companies and subsidiaries, that are either in or outside of Canada.

Funding Availability

Multiple grants could result from this Challenge.

- Estimated number of Phase 1 grants: two
- Estimated number of Phase 2 grants: one

Maximum Project Value

The maximum funding available for any Phase 1 Grant resulting from this Challenge is **\$150,000.00 CAD for up to three months**.

The maximum funding available for any Phase 2 Grant resulting from this Challenge is **\$2,000,000.00 CAD for up to 12 months**. Only eligible businesses that have completed Phase 1 could be considered for Phase 2.

Project Duration

- Phase 1 projects have a maximum duration of three months.
- Phase 2 projects have a maximum duration of 12 months.

Special Notes

Please note that research activities carried out in the context of COVID-19 need to adhere to the University of Guelph COVID-19 research principles, policies, guidelines and processes as they may be updated from time to time and communicated on the [Office of Research web-page](#) [2].

Deadlines

If College-level review is required, your College will communicate its earlier internal deadlines.

Type	Date
External Deadline	Monday, October 25, 2021 - 2:00pm

How to Apply

Eligible companies are required to submit their application through the [Innovative Solutions Canada Website](#) [1].

For Questions, please contact

All incoming questions regarding this specific challenge should be addressed to solutions@canada.ca [3].

All enquiries must be submitted in writing no later than ten calendar days before the Challenge Notice closing date. Enquiries received after that time may not be answered.

You can also consult the [Frequently asked questions](#) [4] about the Innovative Solutions Canada Program.

A [glossary](#) [5] is also available.

Alert Classifications **Category:**

Funding Opportunities and Sponsor News

Disciplines:

Health and Life Sciences

Physical Sciences and Engineering

Source

URL: <https://www.uoguelph.ca/research/alerts/content/covid-19-solutions-reducing-airborne-hazards-ground-public-transportation>

Links

[1] <https://ic.gc.ca/eic/site/101.nsf/eng/00146.html>

[2] <https://www.uoguelph.ca/research/>

[3] <mailto:solutions@canada.ca>

[4] <http://www.ic.gc.ca/eic/site/101.nsf/eng/00004.html>

[5] <http://www.ic.gc.ca/eic/site/101.nsf/eng/00005.html>