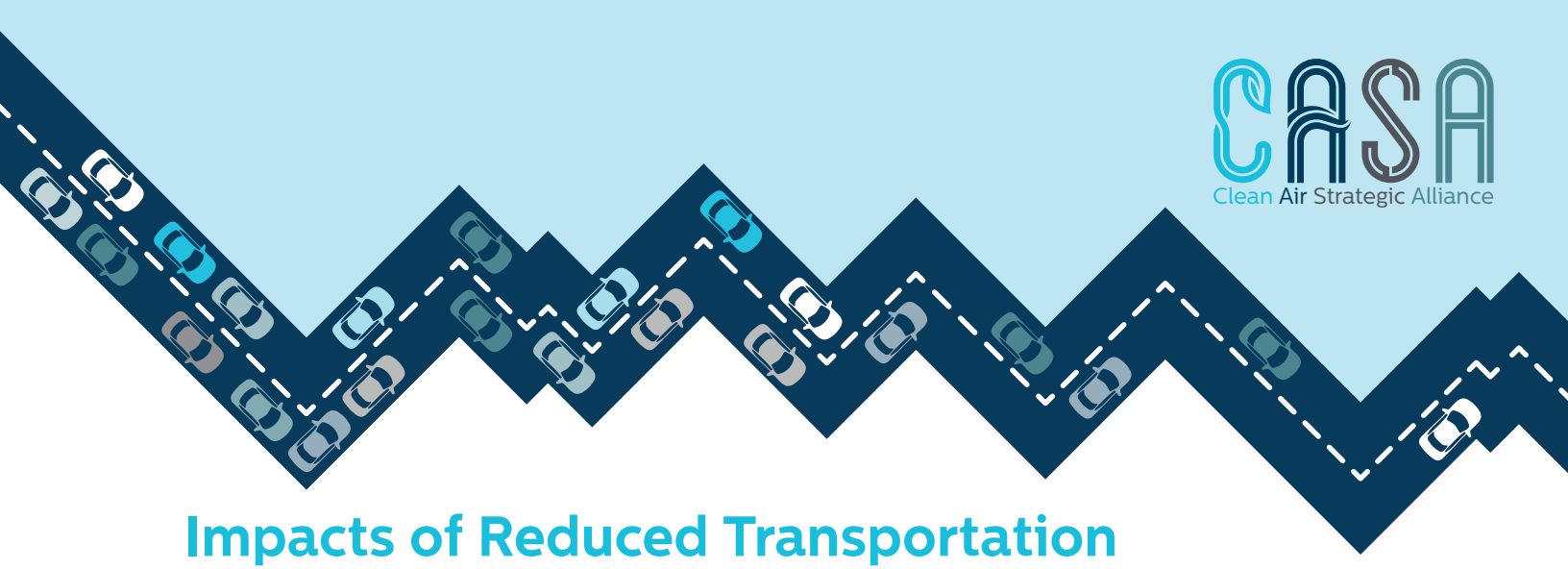

# Impacts of Reduced Transportation on Air Quality in Alberta Associated with COVID-19 (IRTAQ) Project Key Messages

This document provides a convenient summary of the key messages developed for the IRTAQ project; the project's final report is available online.

Air pollution from vehicular traffic (and other sources) has health implications for all Albertans, the details of which are outlined in Appendix 3a of the IRTAQ Final Report. This project found that some of the COVID-19 response measures taken in Alberta resulted in reductions in vehicle traffic counts and these reductions translated to measurable reductions in ambient air pollutant levels (see Appendix 3b of the final report).

While vehicle use is an inherent part of our current society and our economy, air emissions significantly contribute to air pollution levels throughout the province, and particularly in urban areas. Approximately 12% of Albertans live within 250 m of a major thoroughfare with associated higher motor vehicle emission-related air pollution levels.[1]

Reducing air pollution levels associated with motor vehicle emissions is a complicated and challenging issue with many considerations, such as the ubiquitous presence of emitting vehicles, the variability in the types and condition of vehicles on the road (e.g., diesel trucks vs. small passenger cars), and the location of roadways relative to residents and commercial activities. In addition, air pollution that originates in one area often flows to other areas. This means that air emissions from motor vehicles are a shared issue because all Albertans are exposed to these pollutants. More importantly, the way individuals interact with transportation has consequences for both themselves and those around them.

Motor vehicle emissions management involves the complementary roles of federal, provincial, local governments, and other stakeholders. The federal government sets air emission and fuel efficiency standards for new and imported vehicles which have become more stringent over time; however, turnover of the overall vehicle fleet can be slow. The provincial government has jurisdiction over in-use vehicles e.g., maintenance, and local governments may contribute through land-use planning and local bylaws e.g., anti-idling. For transportation fuels, there are accompanying federal and provincial standards. New and continued actions by governments, organizations, industry, and individual Albertans will continue to be important as reflected by the project key messages.

The following are key messages on a) overall takeaways from the study related to vehicle emissions, air quality, and health, and b) actions Albertans can undertake to reduce vehicle emissions and thereby help improve air quality. Guidance that may help stakeholders in the delivery of the key messages is provided in the IRTAQ Final Report.

1 SOCAAR. Near-Road Air Pollution Pilot Study. Toronto: University of Toronto — Southern Ontario Centre for Atmospheric Aerosol Research, 2019.

# General takeaways from the study

Transportation-related emissions can notably contribute to the ambient air levels of various pollutants, including particulate matter (PM), oxides of nitrogen (NO and $NO_2$), carbon monoxide (CO), polycyclic aromatic hydrocarbons (PAHs), certain metals, and black carbon (BC).

## Ambient air quality during the study period relative to past conditions

- Improvements in outdoor air quality were seen in many Alberta cities associated with the reduced traffic during the study period.
- During the COVID-19 public health emergency, the reduced levels of certain air pollutants resulted in decreases in the AQHI of up to 13% at some urban stations with an associated expected reduction in outdoor air pollutant related health impacts.

## Contribution of reduced transportation to improved air quality

- During the COVID-19 public health emergency, the volume of morning commuters dropped approximately 45%, which resulted in improved outdoor air quality for many.
- Working from home helps reduce traffic volume and outdoor air pollutants and commuters' exposure to these pollutants.
- The findings from the project illustrate that taking certain actions can improve outdoor air quality.

## Impacts of air quality on human health

- Even low levels of pollutant exposure can lead to negative short- and long-term health effects.
- Traffic-related air emissions have health impacts on health for people in all areas of Alberta.
- Those most at risk from traffic pollutants are the elderly, the young, those with cardiovascular or pulmonary diseases, or with chronic illnesses.
- Reducing traffic pollutants is anticipated to reduce health impacts such as hospital admissions, emergency room visits, doctor visits, and lost work or school time.
- Alberta has the largest diesel exhaust emissions in Canada. There are negative health impacts from diesel emissions.

# Actions Albertans can undertake to help improve air quality

Below there are examples of measures and actions that individuals, governments, industry, and organizations can take to reduce transportation-related emissions, followed by a longer list of actions that the three groups could share. Some of the measures and actions directly relate to the findings of the IRTAQ Summary Report, while others were borrowed and referenced from similar initiatives.

The intent of these example actions and measures is, at a minimum, to generate awareness of how actions and behaviours impact air quality and in turn, human health. These actions and measures vary significantly in potential impact in reducing emissions and in the ease and time needed to implement them. This is not a comprehensive list and there are likely many actions that are not captured. Individuals, government, and industry/organizations are encouraged to build upon or develop their own actions to reduce emissions where possible. If there was a clear target audience for the message, this audience is included in the brackets at the end of the message. The messaging to governments on expected policy-level actions are included in the final report in the Project Team Recommendations section. In addition to air quality benefits, there may be other co-benefits to undertaking these actions such as saving fuel/money, saving time, improving the longevity of a vehicle, or reducing stress (e.g., reading on transit instead of driving).

## Government (municipal, provincial, federal)

- Follow best practices in land use planning and sustainable communities to address transportation related issues.[2,3] Considerations such as 15-minute neighbourhoods,[4] accessible public transit, and active transportation corridors need priority.
- Build infrastructure to support active transportation (e.g., biking, walking).
- Consider modifying staff work schedules to allow working from home and attending meetings virtually where possible.
- Government agencies with internal or contracted fleets that provide services and have active operations in municipalities and on highways should take actions to reduce fleet emissions. Examples of fleet type activities are parks and roadway maintenance, waste collection, police, transit/bus, etc.
- Natural Resources Canada has information and resources related to improving fuel efficiency for commercial fleets (e.g., driver training in fuel efficiency, imposing maximum vehicle speed, advanced vehicle aerodynamics, automatic engine shut-off after set idling time).[5,6]

## Individuals

- Where and when possible, choose an active mode of transportation (e.g., walk, bike) or use public transportation instead of driving a personal vehicle. (Commuters)
- Consider carpooling as it can help reduce traffic.
- Plan trips and choose an efficient route before you go so that you only have to travel once – saving time, money, and emissions ("trip chaining"). (Commuters)

2 https://albertahealthycommunities.healthiertogether.ca/
3 https://www.ualberta.ca/public-health/research/centres/centre-for-healthy-communities/index.html
4 https://www.smarttransport.org.uk/insight-and-policy/latest-insight-and-policy/what-is-a-15-minute-neighbourhood
5 https://www.nrcan.gc.ca/energy-efficiency/buildings/nrcans-greening-government-services/federal-vehicles-and-fleets/20053
6 https://www.nrcan.gc.ca/energy/efficiency/transportation/commercial-vehicles/reports/7607

## Organizations (could include government, industry, or other groups)

Use the resources listed below for better management of fleet vehicles:

- Natural Resources Canada has information and resources related to improving fuel efficiency for commercial fleets (e.g., driver training in fuel efficiency, imposing maximum vehicle speed, advanced vehicle aerodynamics, automatic engine shut-off after set idling time).[7,8]
- The SmartWay Transport Partnership (SmartWay) is a free and voluntary program that helps businesses move goods efficiently while keeping fuel costs and environmental impact at a minimum. (Partners and affiliates: businesses, commercial trucking/carriers, logistics companies and shippers, non-profit organizations, truck/trailer leasing firms and dealerships.)
- Proven tips for commercial driving and equipment that help save money and reduce emissions through fuel efficiency are available from Natural Resources Canada.[9]
- SmartWay offers webinars on aerodynamic drag reduction and other topics for improved fuel efficiency.[10]
- SmartDriver provides free, practical training to help Canada's commercial and institutional fleets lower their fuel consumption, operating costs, and vehicle emissions. Fleet energy-management training that helps truckers, transit operators, school bus and other professional drivers improve fuel efficiency by up to 35%![11]
- Explore available resources for setting up an idle-free zone, for example through Natural Resources Canada.[12,13]

7 https://www.nrcan.gc.ca/energy-efficiency/buildings/nrcans-greening-government-services/federal-vehicles-and-fleets/20053
8 https://www.nrcan.gc.ca/energy/efficiency/transportation/commercial-vehicles/reports/7607
9 https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/greening-freight-programs/smartway-fuel-efficient-freight-transportation/tips-for-better-driving-and-equipment/tips-for-better-driving-and-equipment
10 https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/greening-freight-programs/smartway-fuel-efficient-freight-transportation/smartway-tools-and-resources/upcoming-smartway-webinars/21080
11 https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/greening-freight-programs/smartdriver-training-series/21048
12 https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/idling/4397
13 https://pamz.org/idle-free/

## Shared actions

### Use these resources to improve fuel efficiency and reduce environmental impact

- Better fuel efficiency/fuel consumption results in fuel savings and less emissions.[14,15]
- Smooth acceleration and strategic coasting can help reduce fuel consumption and emissions. (Commuters, commercial trucking)[16,17]
- Learn driving techniques that can save you in fuel costs.[18]
- In the summer heat, your car's interior will cool down quicker by driving rather than by idling it with the air conditioner running.[14]
- Reduce use of air conditioning, as air conditioning can increase a vehicle's fuel consumption by as much as 20%.[14]
- To save money and minimize emissions, slow down and try to maintain a steady speed. At 120km/h, a vehicle uses about 20% more fuel than at 100 km/h.[14]

14 http://www.nrcan.gc.ca/energy/efficiency/transportation/cars-light-trucks/buying/7489
15 https://www.nrcan.gc.ca/energy/efficiency/transportation/cars-light-trucks/buying/16217
16 https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/personal-vehicles/fuel-efficient-driving-techniques/21038
17 https://amainsider.com/save-money-on-gas/
18 http://www.ecodrivingonline.ca/home.htm

- Use a block heater so you can plug in your vehicle during cold weather. Block heaters can reduce a vehicle's warm up time, increasing fuel efficiency and reducing emissions. It will also reduce wear on your engine components and help warm up your vehicle faster.[19]
- Reduce vehicle idling when warming up your vehicle or otherwise waiting.[20]
- Cut fuel consumption, reduce emissions, and save money by avoiding excessive idling.[21] Examples of excessive idling include pick up/ drop off areas, train crossings, and warming up.[22,23]

## Conduct proper vehicle maintenance

- Follow regular vehicle maintenance schedules to reduce emissions while benefiting the safety and life of your vehicle.[24] (Commuters)
- Maintain proper pressure in your tires to improve fuel efficiency (reduce emissions), reduce tire wear (save money), and improve safety by increasing traction.[25]
- Maintain your vehicle's emission control system in good working order. (Commuters, commercial trucking)
- Idling not only impacts emissions (air pollution) and fuel consumption (costs), but also vehicle wear (more costs and more frequent maintenance).

## Considerations when purchasing a vehicle

- If upgrading to a newer vehicle, consider choosing a lower emission vehicle (i.e., hybrid, plug-in hybrid or ideally, a zero emissions vehicle) where possible. (Commuters, commercial fleets)
- Choosing the most fuel-efficient vehicle that meets your needs can reduce emissions and fuel costs.[26, 27] (Individuals, commercial fleets)
- The Natural Resources Canada fuel consumption ratings search tool helps identify the most fuel-efficient vehicle that meets your everyday needs by comparing the fuel consumption information of different models.[28]
- The 2022 Fuel Consumption Guide provides information about the fuel consumption of 2022 model year light-duty vehicles (passenger cars, vans, SUVs, pickup trucks) to compare vehicles as you shop for the most fuel-efficient vehicle that meets your everyday needs.[29]
- For a quick overview of battery electric vehicles and plug-in hybrid electric vehicles, check out resources from Natural Resources Canada and the Canadian Automobile Association for electric vehicles.[30,31]
- Natural Resources Canada has tips for choosing a fuel-efficient vehicle.[32]
- Natural Resources Canada has some tips for reading EnerGuide labels for vehicles if considering a new purchase.[33]

19 https://amainsider.com/auto-expert-block-heaters/
20 https://www.edmonton.ca/city_government/environmental_stewardship/be-idle-free#:%CB%9C:text=Under%20the%20bylaw%2C%20drivers%20cannot,area%20designated%20as%20no%20idling.&text=Vehicles%20licensed%20to%20provide%20public,are%20exempt%20from%20the%20bylaw
21 https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/idling/4463
22 https://oee.nrcan.gc.ca/transportation/idling/material/reports-research/turn-it-off-exec-summary.cfm
23 https://www.anl.gov/es/reducing-vehicle-idling
24 https://scdhec.gov/sites/default/files/Library/CR-010092.pdf
25 https://ama.ab.ca/articles/how-to-check-tire-pressure

26 https://afdc.energy.gov/conserve/rightsizing.html
27 https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/personal-vehicles/choosing-right-vehicle/20998
28 https://fcr-ccc.nrcan-rncan.gc.ca/en
29 https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/fuel-consumption-guide/21002
30 https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/personal-vehicles/choosing-right-vehicle/buying-electric-vehicle/21034
31 https://www.caa.ca/sustainability/electric-vehicles/
32 https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/personal-vehicles/choosing-right-vehicle/tips-buying-fuel-efficient-vehicle/21000
33 https://www.nrcan.gc.ca/energy-efficiency/energuide-canada/energuide-vehicles/21010

## Remote work arrangements

- Encourage or implement a policy enabling employees to work from home when or where possible. (Employers)
- Consider modifying your work schedule to work from home or attend meetings virtually when or where possible. (Employees)
- Consider reviewing resources or taking part in training opportunities for conducting or participating in remote meetings, which could reduce the need for in-person meetings. (Individuals, employees, employers)

## Refer to educational resources

- Use the Alberta Motor Association (AMA) Road Reporter app to avoid unnecessary travel delays and confirm road and travel conditions.[34]
- Natural Resources Canada has an interactive Idling Quiz — check out the truths or myths![35]
- AMA has several Tips for Green Driving such as avoiding hard braking and acceleration, using cruise control on highway drives where possible, considering reducing driving speed to lower fuel consumption, and opening windows instead of using A/C below 60 km/h to cool the vehicle interior.[36]
- The Canadian Auto Association provides easy fuel-efficient driving tips.[37]

34 https://roadreports.ama.ab.ca/
35 https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/idling/4417
36 https://ama.ab.ca/community/care/protecting-environment
37 https://www.caa.ca/sustainability/fuel-efficient-driving-tips/

CASA
Clean Air Strategic Alliance