

Heavy-Duty Vehicle Emissions Testing Program Re-Design Stakeholder Workshop Report

INTRODUCTION

Background

On 17 January 2019, 23 stakeholders participated in a half-day workshop to provide input into redesigning the heavy-duty vehicle emissions testing program in Ontario. Specific to the program, the workshop focused on tampering and incentives. The workshop was hosted by the Ministry of Environment, Conservation and Parks (“MECP” or “the Ministry”) and facilitated by the Policy Innovation Hub in Cabinet Office.

Participants were invited because they are long-standing program stakeholders or they provided comments on the [Environmental Registry of Ontario notice](#) on “Redesigning Ontario’s Drive Clean Motor Vehicle Emission Testing Program.” Participants represented industry associations whose stakeholders operate heavy-duty vehicles, individual firms, non-governmental organizations (NGOs), public transit agencies, and several academics. 26 organizations were identified as being key heavy-duty program stakeholders and were invited to send a representative to participate in the workshop.

Format

The workshop was an exercise in design thinking, which is a process for creative problem solving based on the needs of those most affected by the problem.¹ Participants worked in three groups of seven to eight people. The facilitated process of the workshop enables participants to:

- Frame the most important questions on the topics,
- Gather inspiration and insights from a cross-section of colleagues,
- Generate ideas to explore how to approach tampering and incentives, and
- Make those ideas tangible by sketching how they might work.

Note

The views in this report reflect those of the participants. The workshop and report will be reviewed by the Ministry in its continued work on redesigning heavy-duty vehicle emissions testing in Ontario.

¹ *Design Thinking*, IDEOU, 2019, <https://www.ideo.com/pages/design-thinking>.

TAMPERING

What is tampering?

Tampering with vehicle or engine emission controls includes:

- **Removing, bypassing, defeating or rendering inoperative any emission control system or device** installed in or on a vehicle or engine, **including software** designed to monitor or control vehicle or engine emissions, or
- **Modifying** the vehicle or engine in any way **that results in increased emissions** from the level to which it was originally designed/certified by the manufacturer or importer of the vehicle or engine.²

During the workshop, participants identified numerous specific examples of tampering, such as the installation of delete kits or defeat devices, alterations to onboard diagnostic (OBD) systems, reprogramming an engine control module (ECM), and many more.

Purpose

Participants responded to several questions to frame the most important considerations for redesigning the existing program on tampering.

Why do firms or operators tamper with emissions control systems on vehicles?

Participants listed many reasons for why a firm or operator might tamper with a vehicle. Participants were nuanced in their assessment of firms and operators who choose to tamper with vehicles. Vehicles are not tampered only by “bad actors.”

For some, tampering can result in several **real or perceived savings**, such as lower fuel consumption, reduced maintenance costs, and avoiding costs for purchasing newer technology or retrofits. Tampering with a vehicle may extend a vehicle’s longevity and allow an operator to continue to use an older vehicle. This was seen as especially important for smaller operators.

Participants generally commented that tampering is not a low-cost option. In fact, it can cost thousands or tens of thousands of dollars in equipment and labour. However, several participants stated that tampering can appear to be a lower-cost option.

Other participants noted that tampered vehicles can have **better performance** in terms of hauling capacity and torque. Several participants noted that some heavy-duty vehicle models have latent emission control system defects that have not been resolved by manufacturers.

Some discussions blended **savings and performance**, with some participants stating that tampered vehicles may avoid downtime due to filter regeneration cycles, vehicles shutting down from functioning or faulty emissions reduction mechanisms, or requiring maintenance that is

² *Vehicle and Engine Tampering Description and Examples of Acceptable Practices*, Canadian Council of Ministers of the Environment, 2016, www.ccme.ca/files/Resources/air/mobile_sources/Tampering%20Description_EN.pdf.

performed by—what some participants perceived to be—a shortage of mechanics knowledgeable of new emission systems and engine technology.

Given some of the reasons outlined above, the real or perceived **lack of enforcement** for existing tampering offences increases the cost-benefit analysis for firms or operators to tamper with vehicles. Further, some participants from research institutes and environmental NGOs noted that there is not enough public education about the harmful effects of certain emissions, which are made worse by tampering.

When asked who in an organization might make the decision to tamper with a vehicle, participants answers ranged from it being a decision made at the manufacturer, by an executive in a firm, or at the local fleet manager level.

Why do firms or operators NOT tamper with vehicles?

While there are many reasons for a firm or operator to tamper with a vehicle, there are many reasons not to tamper.

First, there was a significant appeal to the moral reasoning or reputation of a firm or operator, particularly for large firms and those who are knowledgeable of the human health and environmental effects of emissions. There may also be a fear of being caught or penalized if they are aware first-hand or second-hand of the ministry's enforcement activities.

Practical reasons not to tamper include not voiding the warranty for vehicles or equipment, particularly if a sizeable investment in new vehicles was made recently. Firms or operators working in other jurisdictions with higher enforcement and/or stringency were judged as less likely to tamper. Firms or operators who keep up with regular maintenance are less likely to face conditions where they need to consider tampering as an option.

What should be the purpose of government's new actions on tampering?

Acknowledging that current tampering offences exist, there are potentially more actions the government could take to improve outcomes. While participants represented several industries and a range of perspectives, they generally agreed on the purpose of the governments new actions on tampering.

First, government should strive to level the playing field by shifting the risk-reward or cost-benefit ratio. Tampering should no longer be viable to gain competitive advantage. Rather, it should be an unappealing and uncommon activity. This could be achieved by focusing on those who many participants referred to as "bad actors." Participants proposed several potential activities to achieve these outcomes, many of which were not focused solely on higher penalties and increased enforcement.

Second, participants stated that government should focus on protecting public health and the environment by reducing emissions and particulate matter from poorly performing vehicles.

Ideas on how the government and stakeholders might meet this purpose are described below.

Collaborating on potential solutions

Participants generated **more than 60 unique ideas** for how the government and industry could address tampering. Throughout the exercise, they ranked ideas based on their potential impact and effort.³ Ideas assessed to have low impact were gradually discarded and higher impact ideas were organized in complementary clusters. This process led participants to focus their efforts on the following **five high-impact initiatives**.

1. Address the real or perceived shortfall of skilled mechanics with actions that encourage up-skilling and more trained professionals to work in the field.

- This initiative would help increase skilled labour available to enable quick, efficient repairs of new vehicles with emission reduction technologies. Vehicle owners and operators would no longer need to choose tampering to avoid downtime due to a lack of skilled mechanics to make repairs.
- Some participants suggested a temporary tuition incentive funded by penalties on polluters.
- This initiative could be explored by MECP and the Ministry of Transportation (MTO) and Ministry of Training, Colleges and Universities (TCU). Interested businesses, industry associations, education institutes, and professional associations and labour groups could also participate.
- This included education campaigns addressed to businesses to bust myths about new vehicles and emission reduction technologies.

2. Enable testing and enforcement activities to become more mobile, risk-based, and public.

- This data-driven initiative would focus testing and enforcement activities on vehicles, firms, operators, and transit corridors with high-risk profiles.
- Ministry enforcement officers would have equipment that enables them to conduct mobile roadside testing and enforcement. Some participants suggested enabling MTO enforcement officers with the training, equipment, and authority to also act on emissions issues and/or vehicle tampering. These changes would significantly increase the network and abilities of enforcement officers available to focus on these issues.
- A published list of firms or individuals caught tampering (via timed report or real-time bulletin) was strongly suggested by many participants. This list could deter tampering by adding reputational considerations and increase awareness on enforcement activities.

³ For the purpose of the exercise, *impact* was defined as the influence an idea might have on the desired outcome(s) and its ability to address systemic conditions. *Effort* was used to gauge the resources needed and ability to change.

3. Optimize penalties for those caught tampering to shift the cost-benefit and risk-reward analysis.

- Many participants observed that current penalties and enforcement activities were too low to deter tampering. Generally, participants agreed that both activities would need to be increased to have an effect.
- Penalties should be modeled based on the current cost-benefit analysis firms and individuals face if/when tampering becomes a viable option. If penalties are just above that “breaking point” and complementary enforcement and awareness activities are present, the rational choice will be to invest in vehicles and equipment that will lead to lower emissions.
- Government does not need to be the sole administrator of penalties. Some participants suggested the Ministry could explore with insurers increasing insurance rates for repeat offenders. This might also benefit insurers by having a clearer risk profile on vehicles and their owners.
- Complementary activities would also need to follow, such as defining certain equipment or services and banning its sale, installation, and use. The Ministry could support a “return to compliance” program that helps firms and individuals continue to operate if they participate.

4. Publish or endorse a consumer report on emissions technology performance and reliability.

- The Ministry could publish a report that publishes information on emissions technology. This would help firms and individuals make investment decisions about the best-performing vehicles and equipment.
- The Ministry could instead endorse an existing or potential report published by industry or market research company.
- This report might also encourage manufacturers to address defects and poor-performing vehicles and equipment.

5. Increase public awareness on the effects of heavy-duty vehicle emissions.

- Some participants developed an initiative designed to empower Ontarians about information on the environmental and health effects of heavy-duty vehicle emissions.
- This information could help encourage Ontario businesses to consider the heavy-duty vehicle fleets used by their suppliers.
- There are industry associations and individual businesses that might be interested in partnering on this initiative as a way to promote the “good actors” in the sector.
- This information could also help Ontarians spot the signs of a poorly performing vehicle and enable them to make complaints online or by phone. These complaints could be used to support enforcement activities.

Participants were keenly aware of the government's desire to reduce the burden on businesses and bring the budget into balance. There was general consensus that any required funding for these initiatives should come from penalties on polluters.

INCENTIVES

Purpose

Participants responded to several questions to frame the most important considerations for redesigning the program on incentives.

What should be the purpose of potential incentives?

Participants had many thoughts on the fundamental purpose for incentives. They fell into broad categories focused on reducing the burden on “good actors” and leveling the playing field, promoting compliance, and enabling investment in newer vehicles with fewer emissions.

When asked who the recipients of these incentives should be, participants stated the program should make a priority of supporting actors, behaviours, or technology that provide multiple benefits, such as increasing competitiveness, reducing emissions, and improving public health.

Incentives can reward “good actors” by reducing the burden to prove compliance with options such as remote reporting or less frequent tests. Some participants noted that this might reduce administrative costs on businesses, helping them remain competitive with businesses or operators who have chosen to tamper with their vehicle to reduce other costs. Financial incentives could also be considered to level the playing field between small-, medium-, and large-sized businesses by increasing purchasing power for smaller businesses.

Some participants noted that incentives can promote compliance by containing a reputational incentive, such as a “green” or “clean” certification that might generate business from clients conscious of working with suppliers that demonstrate these attributes.

Incentives can push owners to retire their heavy-duty vehicles sooner, deter tampering, and promote purchasing a newer vehicle. These incentives could support Ontario's planned emission reductions in the transportation sector, such as promoting the uptake of low carbon vehicles. However, as one participant remarked, businesses often need incentives that reduce or remove risk of investing in newer technologies. Potential incentives could promote fuel switching to cleaner sources, such as bridging the gap between diesel and compressed natural gas.

As an example of financial incentives making a difference, a participant representing an industry association noted that the recent federal Accelerated Investment Incentive is supporting new investments in the trucking industry that should align with the purpose and objectives of Ontario's redesigned program for heavy-duty vehicles. Participants who heard this comment suggested that the Government of Ontario should study if these new investments might be influencing questions about competitiveness and supporting the transition to a lower-emitting fleet.

Collaborating on potential solutions

Participants generated **more than 50 unique ideas** for how the government could provide incentives to industry to encourage activity that benefit all Ontarians. Many additional incentives were developed to address tampering, which participants continued to discuss during this exercise. Throughout the exercise, participants ranked ideas based on their potential impact and effort. Ideas assessed to have low impact were gradually discarded and higher impact ideas were organized in complementary clusters. This process led participants to focus their efforts on the following **five high-impact initiatives**.

1. Enable self-testing and reporting based on compliance history.

- This initiative would allow compliant businesses to self-test and report results. It would authorize business-owned facilities to submit diagnostic data remotely to the Ministry.
- Random testing could continue to ensure continued compliance, but there would be a significant net reduction in administrative time and costs on compliant businesses. The Ministry might also reduce administrative time and costs, though new technology investments are likely required.

2. Retire and scrap older, high-emitting vehicles and replace them with newer, lower-emitting vehicles.

- This initiative would encourage retirement and scrappage of older, high-emitting vehicles and accelerate the shift to newer, lower-emitting vehicles.
- The incentive could be calculated based on emission reductions and the “tipping point” for businesses facing decisions to replace them with several options. Incentives could be scaled on the size of a business, making it accessible to small and large businesses.
- Overall, the incentive should target the worst emitting vehicles with most impact on health and climate change.
- New vehicles could automatically qualify for a “clean” or “green” certification.
- Due to the nature of the vehicles, some participants suggested the government require a report to ensure the vehicle and its parts are scrapped and not resold.
- Some participants noted that the incentive should discourage or even prohibit the purchase of a pre-2007 diesel engine due to changes in standards.

3. Promote fuel switching to lower-emitting fuels.

- As discussed above, financial incentives could be considered to promote fuel switching to lower-emitting sources. Many participants noted the switch from diesel to compressed natural gas or propane could have environmental benefits. Other participants suggested the Ministry conduct more research to understand the full consequences of fuel switching, including safety considerations.
- These incentives could be aimed at vehicle purchasers, public service fleets, fuel suppliers to promote investments in infrastructure, and vehicle manufacturers.
- All businesses, particularly smaller businesses, would likely benefit from educational material on the benefits of switching this initiative.

4. Establish or endorse a “Clean” or “Green” fleet certification.

- This initiative would certify business or vehicles with a reputational identifier.
- Alternatively, the Ministry could align with or endorse the existing federal SmartWay program, which has the benefit of a partnership with the United States.
- Some participants suggested certificate holders could also be considered for other incentives and/or as a preferred supplier for government.

5. Establish a graduated rating system for fleet certification.

- This initiative is a graduated scale (e.g., green, orange, red) on emissions compliance that would be made public on a provincial registry.
- This initiative would require more frequent reporting, but it could be done remotely due to enhancements in vehicle reporting systems.
- This graduated scale would be more specific and enable more specific feedback for government and vehicle owners.

In addition to the initiative above, some participants suggested that this redesigned program should consider Ontario’s overall freight strategy and planning, including municipalities responsible for local by-laws. As several participants suggested, incentives and legislative and regulatory changes could help “right-size” the heavy-duty vehicle fleet and promote lower- or zero-emitting vehicles to deliver goods.

Participants were keenly aware of the government’s desire to bring the budget into balance. There was consensus that any required funding for these initiatives should come from penalties on polluters. Some participants suggested that incentives could also come from the government’s announced Ontario Carbon Trust emission reduction fund.⁴ The fund is estimated at \$350 million and will be designed to leverage private capital at 4:1, which might be the type of incentive that enables businesses to invest in newer vehicles with fewer emissions.

CONCLUSION

Before ending the workshop, participants shared reflections, constructive observations, and recommendations with the Ministry in an open dialogue and on anonymous worksheets.

Reflections

Participants were thankful to participate in the process through a workshop rather than a more traditional approach. A number of participants stated they were delightfully surprised by the willingness of all attendees to talk openly and exchange insights. The conversations benefited from the breadth of expertise and different perspectives from having many participants. Despite

⁴ *A Made-in-Ontario Environment Plan*, Ontario Ministry of Environment, Conservation and Parks, 2018, <https://www.ontario.ca/page/climate-change>.

the diversity of perspectives, there was general agreement from participants on the objectives of the program and tools the Ministry should consider.

A number of participants stated that they were shocked by the volume of tampering in the province, while again noting that vehicles are not tampered with solely by “bad actors.”

Constructive observations

Participants were generally hungry for more information and more time to work together in their groups. Many would have stayed for a longer session, though appreciated the Ministry valuing their time. Many more stated that they were interested in participating in another workshop to build on these ideas.

Several participants suggested having more data available to take a “deeper dive” or “dig” into things with more detail.

Some participants wanted to take the conversation “up a level” by connecting the program to other government considerations, such as a provincial freight strategy or the Ontario Carbon Trust and actions to reduce emissions.

Recommendations

Some participants encouraged the Ministry to ensure it did not use the term “bad actors” or others like it without discretion.

Many participants recommended the Ministry consider more than just tampering and incentives. The Ministry reassured participants that it is considering many angles, but tampering and incentives were the two areas in need of discussions like the ones had during the workshop.

Several participants suggested the Ministry continue to clarify its objectives with the program. Some noted that one objective should be ensuring the program is revenue neutral.

A concluding recommendation was to conduct more workshops like this, with the same diversity of participants and tools and templates that generate constructive discussions.

Next steps

In addition to this workshop, the Ministry is learning lessons from a large network of jurisdictions with similar programs. The Ministry thanks all participants for their time and contributions during the workshop. The proposed program design for the future heavy-duty emissions testing program will be posted on the Environmental Registry of Ontario and at that time the Ministry will reach out to stakeholders to submit their comments.