

A Guide to Autonomous Vehicles 2021 – A Canadian Perspective





Contents

04 ...	Executive Summary
05 ...	Regulatory overview
07 ...	Driverless vehicle testing and deployment
10 ...	Liability
15 ...	Data privacy and security
16 ...	Telecommunications and 5G
17 ...	COVID-19 impact



Executive Summary

The autonomous vehicle industry has faced the impact of the COVID-19 pandemic alongside the entire world economy. Our collective understanding of transportation, and human interaction more generally, has significantly shifted. However, despite the industry-wide headwinds, significant technological and regulatory progress has been made. We are closer than ever to the widespread use of autonomous vehicles. With that said, barriers and questions remain.

Drawing on the knowledge and resources of its global, multidisciplinary Autonomous Vehicles practice, Dentons' "A Guide to Autonomous Vehicles 2021 – A Canadian Perspective" dissects the frontburner policy issues, legislative and regulatory frameworks and updates, new legal precedents and leading global trends shaping the sector. The report examines five key areas: regulatory landscape; driverless vehicle testing and deployment; liability; data privacy and security; and telecommunications and 5G. Finally, we cover the impact of the COVID-19 pandemic on the global autonomous transportation industry.



Regulatory overview

In Canada, autonomous vehicles are subject to regulation at all three levels of government: (i) federal; (ii) provincial and territorial; and (iii) municipal. At present, most of the regulatory activity is concentrated at the federal level, in the provinces of British Columbia, Ontario and Quebec, and in a few major municipalities. Overall, the government of Canada remains optimistic about the future of autonomous transport while also operating cautiously to ensure that its rollout is safe and beneficial to the public.

The federal government is responsible for regulating manufacturing and infrastructure as it relates to vehicles. The provinces and territories are responsible for the licensing of drivers, vehicle registration and insurance, and laws and regulations regarding the safe operation of vehicles on public roads. The regulatory agencies in the major jurisdictions are as follows:

Region	Agency
Federal	<i>Transport Canada</i> : Sets and enforces compliance with safety standards for manufactured and imported vehicles.
	<i>Innovation, Science and Economic Development Canada (ISED)</i> : Sets and enforces compliance with technical standards relating to wireless technology integrated in vehicles and roadside infrastructure.
British Columbia	<i>Ministry of Transportation and Infrastructure</i> : Plans transportation networks, provides transport infrastructure, develops transportation policies and enforces related acts and regulations.
Ontario	<i>Ministry of Transportation (MTO)</i> : Licensing of drivers, vehicle registration and insurance, and regulating the safe operation of vehicles on public roads.
Quebec	<i>Société de l'assurance du Québec (SAAQ)</i> : Enforces the <i>Highway Safety Code</i> , which covers the use of vehicles, pedestrian traffic and road safety in the province.

The federal government has not introduced an overarching policy for autonomous vehicles (AVs). However, the Canadian Senate has provided guidance to federal agencies to take a policy leadership role and to guide provinces in facilitating trials.

Specifically, the Standing Senate Committee on Transport and Communications has provided guidance through 16 recommendations to Transport Canada and ISED to build a coordinated national strategy on automated and connected vehicles. Those recommendations include, among other things, that the ISED allocate spectrum for connected vehicle uses, and in cooperation with Transport Canada, create a policy unit to coordinate federal efforts on automated and connected vehicles. It has also recommended that Transport Canada engage with provincial governments through the Canadian Council of Motor Transport Administrators (CCMTA) to develop a model provincial policy for the use of automated and connected vehicles.¹

¹ Senate of Canada, Report of the Standing Senate Committee on National Finance, "Driving Change: Technology and the future of the automated vehicle" (January 2018), online (pdf): <https://sencanada.ca/content/sen/committee/421/TRCM/Reports/COM_RPT_TRCM_AutomatedVehicles_e.pdf>.



Transport Canada and the CCMTA have set testing guidelines for the provinces for levels 3, 4 and 5 driving automation systems in the *Testing Highly Automated Vehicles in Canada* publication.² Any trial organization must ensure that the highly automated vehicle (HAV) conforms to the federal *Motor Vehicle Safety Act* (MVSA), and if wireless technologies are involved, ensure compliance with certification and licensing requirements established by Innovation, Science and Economic Development Canada (ISED). Additionally, the trial organization must comply with each province's licensing, registration and insurance requirements. The CCMTA's *Canadian Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles*³ (HAV Testing Guidelines) supplement the testing guidelines and provide additional guidance on how to prepare and roll out AVs and maintain road safety.

Transport Canada has also provided policy guidance on safety in its report, *Safety Assessment for Automated Driving Systems in Canada*, in order to assist ADS (automated driving systems) developers. Safety in the context of ADS primarily relates to:

- The design and validation of the vehicle;
- Safety systems within the vehicle for driver accessibility; and
- Cyber security and data management for data.⁴

Canada's *Safety Framework for Automated and Connected Vehicles* not only provides guidance for the safe deployment of automated and connected vehicles on public roads, but also sets out a flexible approach by utilizing non-regulatory tools to support safe testing of ADS. utilizing non-regulatory tools to support safe testing of ADS.⁵



2 Transport Canada, *Testing Highly Automated Vehicles in Canada* (16 May 2018), online (pdf): <<https://www.tc.gc.ca/en/services/road/safety-standards-vehicles-tires-child-car-seats/testing-highly-automated-vehicles-canada.html>>.

3 Canadian Council of Motor Transport Administrators, *Canadian Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles* (June 2018), online: <<https://www.ccmta.ca/images/publications/pdf/CCMTA-AVGuidelines-sm.pdf>>.

4 Transport Canada, *Safety Assessment for Automated Driving Systems in Canada* (January 2019), online (pdf): <https://www.tc.gc.ca/en/services/road/documents/tc_safety_assessment_for_ads-s.pdf>.

5 Transport Canada, *Canada's Safety Framework for Automated and Connected Vehicles* (February 2019), online (pdf): <https://www.tc.gc.ca/en/services/road/documents/tc_safety_framework_for_acv-s.pdf>.



Transport Canada has also released Canada’s *Vehicle Cyber Security Guidance* with non-prescriptive guiding principles to ensure that the technology driving autonomous vehicles is secure. The key principles organizations involved in the development and testing of automated vehicles are encouraged to follow are: 1) identification of management systems for cyber security risks; 2) adopting appropriate safeguards; 3) detecting, monitoring and responding to cyber security events; and, 4) recovering efficiently from any cyber security events that occur.⁶

In addition to the federal government’s testing guidelines for provinces discussed above, there are a few other ongoing regulatory projects of note:⁷

British Columbia	Ontario	Quebec
The Ministry of Transportation and Infrastructure has an AV Working Group that monitors progress within the AV field, but there is no timetable for testing policies. Nothing related to developing the AV industry was included in the 2020 BC budget.	The MTO launched a 10-year pilot program in 2016 to test AVs. The program was last updated in 2019. Now the pilot only applies to levels 4 and 5 automation (as defined by the SAE). Levels 1 through 3 are permitted on Ontario’s public roads. ⁸	SAAQ has opened the door to the implementation of pilot projects to test AVs. The Highway Safety Code (HSC) was amended in 2018 to introduce an autonomous vehicle definition and create an avenue for a pilot project approval. ⁹

Driverless vehicle testing and deployment

As discussed above, while the federal government, through Transport Canada, is responsible for setting and enforcing compliance with motor vehicle safety standards, the provinces and territories are responsible for the licensing of drivers, vehicle registration and insurance, as well as laws and regulations regarding the safe operation of vehicles on public roads. As such, provinces and territories are also responsible for approving and overseeing trials of automated vehicles that take place within their jurisdictions, which may involve seeking guidance from Transport Canada regarding trial applications and best practices, as well as the provinces and territories looking to each other (for example, Ontario’s Pilot Program, discussed below), in order to develop standards for vehicle testing and deployment. Provinces and territories are also responsible for adapting local infrastructure to support AV deployment.

6 Transport Canada, *Canada’s Vehicle Cyber Security Guidance* (March 2020), online (pdf): https://www2.tc.gc.ca/documents/cyber_guidance_en.pdf at 13.

7 Transport Canada, *Testing Highly Automated Vehicles in Canada* (16 May 2018), online (pdf): <https://www.tc.gc.ca/en/services/road/safety-standards-vehicles-tires-child-car-seats/testing-highly-automated-vehicles-canada.html>.

8 Ministry of Transportation, “Ontario’s Automated Vehicle Pilot Program”, online: MTO <http://www.mto.gov.on.ca/english/vehicles/automated-vehicles.shtml>.

9 Societe de l’assurance automobile Quebec, « Autonomous Vehicles », online : SAAQ <https://saaq.gouv.qc.ca/en/road-safety/modes-transportation/autonomous-vehicles/>.



The main federal and provincial/territorial schemes regarding AV testing and deployment are summarized below:

Region	Agency
Federal	At the federal level, section 7(1)(a) of the MVSA permits testing. Section 7(1)(a) provides for an exception that allows people or companies to temporarily import a vehicle that does not comply with the Canadian Motor Vehicle Safety Standards, if the vehicle is for testing, demonstration or evaluation. ¹⁰ Transport Canada's Innovation Centre permits testing of AV truck platooning. The federal government also amended the Motor Vehicle Safety Regulations, ¹¹ adding section 11.1, to give more flexibility on the length of time that an automated or other temporarily imported vehicle may be imported into account beyond the one-year limit that previously existed in Schedule VII of the Regulations. This will allow more time to evaluate the technology before the requirement of destruction or exportation.
British Columbia	British Columbia does not have any AV testing regulations. The province will likely follow the CCMTA's HAV Testing Guidelines when implementing testing regulations but at present the vehicle must comply with MVSA regulations. Additionally, the company conducting AV trials will likely have to make a declaration that they have addressed any safety concerns associated with the trial AVs.
Ontario	The MTO's Automated Vehicle Pilot Program permits companies to apply to test driverless vehicles on public roads. The program prohibits the use of AVs (levels 4 and 5) except as permitted by the pilot project. If the vehicle was originally manufactured as an AV, the owner must be the original manufacturer and be a company as defined by the MSVA. If the vehicle was converted into an AV, the owner must be the person who converted the vehicle, and must be a tech company, research institution or AV manufacturer. The Registrar must be satisfied that the owner has expertise to properly convert vehicles into AVs. In addition, the vehicle must have a disengagement/engagement mechanism, failure alert, and mechanism enabling the driver to take over all dynamic driving tasks. Finally, companies must obtain approval from the MTO in order to test AVs (levels 4 and 5) and a minimum CA\$5 million in liability insurance and CA\$8 million for vehicles with a seating capacity of eight or more passengers. Pilot project applications must be evaluated and accepted by the Minister.
Quebec	Quebec's HSC allows for AV testing applications but does not specify terms for AV testing if the application is approved. The CCMTA's HAV Testing Guidelines will likely be followed when the province implements testing regulations. The vehicle must comply with MVSA regulations and the company conducting AV trials will likely have to make a declaration that they have addressed any safety concerns associated with the trial AVs. Section 633.1 of the HSC provides successful applicants with a three-year period to conduct tests in the province, which the Minister may extend by up to two years if the Minister considers it necessary. ¹²
Other Canadian jurisdictions	The CCMTA recommends any testing regulations be at least as strict as those implemented in Ontario. As such, a disengagement/ engagement mechanism, failure alert, and mechanism enabling the driver to take over all dynamic driving tasks are all likely to be required for AVs that are operated with a driver. Companies will need to obtain a test permit pursuant to an approved application to test on public roads and have a minimum of CA\$5M in liability insurance coverage and beyond CA\$5M when testing larger vehicles (8 or more passenger capacity). Moreover, employees of the company testing the AV will likely be required to complete training (provided by the company) with respect to the capabilities and limitations of the test vehicle. The training logs must be submitted to the applicable provincial agency. On March 4, 2020, the Province of Manitoba introduced legislation to allow the safe testing of automated vehicles in Manitoba. Bill 23 enacts the Vehicle Technology Testing Act and amends various Acts
All jurisdictions	Underwriters Laboratories (UL) has released UL 4600, "Standard for Evaluation of Autonomous Products" which is the first dedicated safety standard for fully autonomous vehicles.

¹⁰ Motor Vehicle Safety Act, SC 1993, c 16.

¹¹ Motor Vehicle Regulations, CRC, c 1038.

¹² Highway Safety Code, 1986, C-24.2.



In sum, the Canadian federal government has taken on a leadership role to ensure consistency across all jurisdictions by providing guidance on the future of the AV industry. Canada is highly ranked in KPMG's latest report on autonomous vehicles readiness as countries continue to move forward with testing.¹³ The current regulatory environment in Canada is supportive of the development and use of AVs and Ontario is the leader for testing and developing AV technology in the country.¹⁴ Ontario released its CAV readiness plan in 2020 setting out what is required from the public sector to prepare for CAVs and the effects they will have on the Greater Toronto and Hamilton Area and all communities connected by Metrolinx.¹⁵

In regard to vehicle deployment in Canada, licensing and registration falls under provincial jurisdiction. While there are no specific regulations on deployment in British Columbia, in Ontario, *Regulation 517/18* under the *Highway Traffic Act* prohibits individual consumers from putting an AV (SAE levels 4 and 5) on public roads.¹⁶ Similarly, in Quebec, *An Act to amend the Highway Safety Code and other provisions* prohibits consumers from having an AV (SAE levels 3-5) on public roads.

The provincial statutes do not directly address consumers taking rides from autonomous vehicles operating by companies, and interestingly, in Quebec, an AV shuttle pilot in Candiac is allowed to charge customers. In addition, *An Act respecting remunerated passenger transportation by automobile*,¹⁷ which came into force on October 10, 2020, allows the Minister, by regulation and after consulting with the Société, to authorize the remuneration of passenger transportation in autonomous vehicles. An electric AV shuttle

project in the City of Calgary is also allowed to charge customers.¹⁸ Earlier this year, the City of Hamilton announced details about upcoming testing on city streets. The Centre for Integrated Transportation and Mobility will install three devices on lamp standards and telephone poles in downtown Hamilton.¹⁹ Finally, the University of Windsor was selected for an autonomous vehicle study that will be conducted on Highway 401 as they work to identify areas for improvement in the cars they test.²⁰

Regardless, companies have to obtain consent for transporting consumers in autonomous vehicles. In Ontario, companies must obtain consent pursuant to Ontario's AV Pilot Project regulations in order to put an AV (SAE level 4-5) on the road. In Quebec, companies must obtain consent pursuant to *An Act to amend the Highway Safety Code and other provisions* to put an AV (SAE level 3-5) on the road, and in other jurisdictions, companies must obtain the Registrar's consent.



13 KPMG, "2020 Autonomous Vehicles Readiness Index", online (pdf): <<https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/07/2020-autonomous-vehicles-readiness-index.pdf>>

14 Bill 23, *The Vehicle Technology Testing Act*, 2nd Sess, 42nd Leg, Manitoba, 2020 (first reading March 4, 2020).

15 Ontario Ministry of Transportation, CAV Readiness Plan (March 2020), online (pdf): <<https://tcdocs.ingeniumcanada.org/sites/default/files/2020-05/The%20Ministry%20of%20Transportation%20of%20Ontario%20%28MTO%29%20-%20CAV%20Readiness%20Plan.pdf>>

16 O Reg 517/18.

17 SQ 2019, c 18.

18 Naomi Wolf, "You can ride a driverless shuttle for free in Calgary starting Saturday", CBC News (3 September 2018), online: <<https://www.cbc.ca/news/canada/calgary/calgary-autonomous-shuttle-zoo-spark-1.4803460>>

19 Tim Hogue, "Hamilton puts autonomous vehicles to the test", *Hamilton Spectator* (15 February 2020), online: <<https://www.hamiltonnews.com/news-story/9855268-hamilton-puts-autonomous-vehicles-to-the-test/>>

20 Dave Waddell, "Province selects University of Windsor for autonomous vehicle study" *Windsor Star* (21 April 2020), online: <<https://windsorstar.com/news/local-news/province-selects-university-of-windsor-for-autonomous-vehicle-study>>



SPOTLIGHT

Toronto is teaming up with the Toronto Transit Commission (TTC) and Metrolinx to pilot an autonomous shuttle program, which is projected begin running on public roads as soon as Spring 2021.³²

The City of Toronto, TTC and Metrolinx put out a public request for information, calling on those in the tech industry working on automated shuttles to share information on potential suppliers, related software, and solution providers so the city can understand what's available on the market, and any limitations.³³

The shuttle would be an automated vehicle (AV) that is mostly self-driving with an on-board human attendant at all times. The shuttle operator must comply with Ontario Regulation 306/15, Pilot Project - Automated Vehicles to the Highway Traffic Act in order to operate on a public roadway; approval by the Registrar will be a requirement of the request for proposals to original equipment manufacturers of shuttle vehicles.³⁴

Toronto is the first city to devote full-time staff to AVs and is in the midst of a Three-Year Automated Vehicles Work Plan, which will direct further investigations into the role that AVs will play within its transportation system and wider city planning.

The Canadian Urban Transit Research and Innovation Consortium (CUTRIC) also received over \$1 million in funding from its partners and the federal government to establish the National Academic Cluster for Smart Vehicles (NAC-SV). They are working to standardize the technology needed to use in transit and mass-mobility and are hoping to achieve multi-manufacturer interoperability to allow cities and transit agencies more choice in the autonomous shuttles and suppliers that they are using.³⁵

Liability

Canada has not defined what particular liability regimes apply to AVs in the event of an accident. However, it is reasonable to assume that anyone who causes or contributes to an injury or damages may be held liable. Accordingly, relevant liability regimes will depend on a variety of factors, including the degree of the vehicle's autonomy, and the nature of the accident. Canada's

tripartite regulatory regime (see "Regulatory Overview" section above) may also result in different liability rules across provinces, as the laws and regulations regarding safe operation of vehicles on public roads remains under provincial jurisdiction.

The extent of liability, including who may be responsible, will largely depend on the vehicle's degree of autonomy and an analysis of the various inputs to

21 City of Toronto, "Autonomous Shuttle Trial", online: <https://www.toronto.ca/services-payments/streets-parking-transportation/transportation-projects/automated-vehicles/automated-vehicles-pilot-projects/automated-shuttle-trial/>

22 Memorandum from TTC Board to Chief Customer Officer, "Automated Transit Shuttle Pilot Project" (12 June 2019), online (pdf): *Toronto Transit Commission*

23 Memorandum from TTC Board to Chief Customer Officer, "Automated Transit Shuttle Pilot Project" (12 June 2019), online (pdf): *Toronto Transit Commission* https://www.ttc.ca/About_the_TTC/Commission_reports_and_information/Commission_meetings/2019/June_12/Reports/18_Automated_Transit_Shuttle_Pilot_Project.pdf at 6.

24 CUTRIC, "Cutric Partners Launch the First Research Group on Smart and Autonomous Vehicles" (5 March 2020), online: <https://cutric-crituc.org/cutric-partners-launch-the-first-research-group-on-smart-and-autonomous-vehicles/>



the AV's system. The range of potentially liable persons includes drivers, manufacturers and anyone who could be responsible at law for causing or contributing to the incident.

Generally, discussion of liability in the AV context engages (i) traditional negligence, (ii) no fault liability, (iii) strict liability, (iv) product liability, (v) negligence per se and (vi) criminal liability, as potentially applicable regimes.

- **Traditional negligence (of the operator):** Drivers have a duty to take reasonable care²⁵ in the operation of their vehicles. Drivers are liable for damages they cause in breach of this duty of reasonable care. In traditional rules of negligence, the wrongdoer must compensate the victim for the harm suffered. This liability regime may be an appropriate fit for discerning liability in the context of AV accidents, because its basis in “reasonableness” offers the requisite flexibility for responding to society’s evolving understanding of AV technology and capabilities. Contemporary resolutions are highly influenced by a mandatory-insurance regime that distributes liability according to the particulars of each accident, as outlined by corresponding statutory guidelines.
- **No-fault liability:** Traditionally, a no-fault liability regime prohibits accident victims from suing other drivers, unless their injuries reach a certain degree of severity. In the context of AV accidents, the no-fault regime may be extended to preclude claims against other drivers altogether, on the basis that relief from an accident flows directly from the manufacturer or their insurance company. As responsibility for the accident shifts away from the driver, no-fault systems may become more prevalent. Also, it will become increasingly difficult to attribute liability to the driver in circumstances where the driver has become a passenger.²⁶ Changes to provincial motor vehicle
- **Strict liability:** Strict liability could be an alternative to negligence-based liability. This would be particularly relevant in the event that an AV was deemed non-compliant with MVSA standards. Strict liability holds the defendant, in this case the manufacturer or the driver, legally responsible for the accident, regardless whether a negligent or intentional act was committed.²⁷ This theory may be especially applicable to drivers of early market autonomous vehicles because they will likely be more knowledgeable of the risks that driving an AV entails, and may consequently bear the associated costs from accidents regardless whether they are legally at fault.²⁸ However, if the auto-pilot feature of a vehicle is engaged, and the driver’s use of that feature was proper, it may be difficult to argue that the driver was at fault.
- **Product liability:** Liability in the event of an accident will inevitably shift towards the manufacturer (or manufacturers) as the particular technology retains greater control over the vehicle. Product liability claims are based in negligence. In Ontario, there are three main types of negligence establishing tort liability for damages or injuries caused by defective products: (a) negligent manufacture, (b) negligent design, and (c) failure to warn. It is the obligation of the plaintiff to establish that negligence exists. The defendant can defend the negligence claim by producing evidence that demonstrates how they are not responsible, including by demonstrating compliance with regulatory and industry standards.
- While this liability regime seems applicable in theory, it may be unsuitable for victims of AV accidents in practice. The development of an AV transportation system involves inputs from various design and system authorities. The systems authority would

25 Zev Winkelman et al., When Autonomous Vehicles are Hacked, Who is Liable? (2019) Rand Corporation, at 72. Online: https://www.rand.org/pubs/research_reports/RR2654.html.

26 James M Anderson et al., Autonomous Vehicle Technology: A Guide for Policymakers (2016), Rand Corporation, at 118. [Autonomous Vehicle Technology: A Guide for Policy Makers]

27 CED (online) Torts, Principles of Liability (11.1.(c)).

28 Autonomous Vehicle Technology: A Guide for Policy Makers supra note 2 at 114.



ensure that, when these groups are brought together, the result is a functional and safe system.²⁹ The rollout of a continent wide transportation system would require collaboration amongst all of these parties, possibly contributing to ambiguity about overall responsibility for vehicle safety. Accordingly, diagnosing a specific product defect will be very difficult, as will be determining who should be responsible for the defect. The requisite due diligence associated with the discovery process will require substantial expertise and time; it will likely be too expensive for individual claimants.

- **Negligence per se:** In the AV context, a negligence per se regime would inevitably require a statute to be passed or regulations to be established providing the requisite rules to which manufacturers and design and system authorities must adhere. Liability would be found when a party failed to abide by the established rules.
- This liability regime may be more advantageous than traditional negligence or strict liability standards because it allows injured parties to recover damages, while still promoting the development of safe autonomous vehicles.
- **Criminal liability:** Traditionally, criminal liability applies to any vehicular crime that has a mens rea requirement.³⁰ However, the autonomous element of AVs raises a number of issues for traditional criminal applications; these issues proliferate as control of the vehicle shifts from driver to operator. For example, legislators will have to consider whether to place criminal responsibility in the event of a hack, technological malfunction, terrorist attacks, drug trafficking and other criminal activity that could utilize an AV.³¹

In sum, whether the fleet operator, seller, re-seller, manufacturer or parts manufacturer could be liable in the event of an accident will depend on the nature of the legal relationship with the plaintiff. It will also depend on the nature of the specific AV accident, although, for sellers and resellers, in particular, liability will likely hinge on whether they are involved in the manufacture or operation of the AV. Further, whether the test driver or negligent hiring standards are to blame will depend on the circumstances of the case. While no such case exists in Canada, it is more likely that enforcement will first turn to the manufacturer, before attributing liability to the test driver or negligent hiring standards.

As previously stated, there is no current federal law regulating automated driving. Responsibilities for AVs will be shared between federal and provincial powers, owing to Canada's constitutional framework. That being said there are a few preexisting laws and guidelines of note that may address liability on a case-by-case basis, including:

- The MVSA safety standards for vehicles;
- The *Criminal Code* requirements for the safe operation of a motor vehicle which prohibit dangerous and careless driving;
- Transport Canada guidelines, released April 12, 2019, that direct the safe conduct of automated vehicle trials in Canada, agreed upon by federal, provincial and territorial representatives of the Canadian Council for Motor Transport Administrators (CCMTA).³² The guidelines, however, are intended to cover temporary trials of AVs, and not their permanent market deployment.

29 Roger Kemp, *Autonomous Vehicles-Who Will Be Liable for Accidents*, (2018) 15 *Digital Evidence & Electric Signature* LR 33 at 37.

30 Dangerous driving and criminal negligence are two examples of objective *mens rea* offences which are premised on the accused's degree of departure from the standard of care.

31 Frank Douma & Sarah Palodichuk, *Criminal Liability Issues Created by Autonomous Vehicles* (2012) 52 *Santa Clara LR* 4 at 1163. [Criminal Liability Issues Created by Autonomous Vehicles]

32 Ibid.



- CCMTA guidelines, published in June 2018, which provide that for vehicles classified as SAE Level 4³³ or 5,³⁴ which may be operated without a licensed driver onboard and where the dynamic driving task may be performed independent of human control, new statutes or regulations may be required to establish responsibility and liability for violations of traffic laws. Product liability issues arising from such cases may be matters of civil process ex post facto but should not impact the enforcement of laws contemporaneously with operation³⁵.

Provincial policy statements, as well as limited existing regulations, also shed light on liability issues in certain circumstances:

- The Ontario Ministry of Transportation has mandated that drivers will still need to be in full care and control of vehicles with SAE level 3 technology and all existing laws (such as distracted, careless and impaired driving laws) will continue to apply to drivers of these vehicles. Drivers are responsible for the safe operation of these vehicles at all times.³⁶
- In 2016, Ontario launched a pilot program to allow the testing of automated vehicles on its roads. The program allows eligible participants (i.e. auto manufacturers, technology companies, academic and research institutions, and parts manufacturers) to apply for a permit to test SAE Level 3, 4 and 5 automated vehicles under strict requirements outlined in Regulation 306/15: Pilot Project – Automated Vehicles of the Highway Traffic Act.

One of the requirements for participants under the pilot program is to accept liability in an at-fault collision caused by the technology, if driverless.³⁷

Although liability concerns arising in the AV context remain, for the most, uncharted territory, a March 2020 publication of the Ontario Ministry of Transportation’s “CAV Readiness Plan” outlines regulators’ objectives to establish liability standards. Objectives outlined in the report include:

- Developing new policies to address responsibility and liability concerns when transferring customers from public transit services to private mobility services;³⁸
- Developing regulations on liability, insurance and incident responsibility requirements for CAV operators for transit services, pilot programs, personal and shared use;³⁹
- Identifying areas where new policies are required to address responsibility and liability concerns when transferring customers from public transit services to private mobility services, especially in the case when the two services are integrated and co-operating to fulfill passenger trips;⁴⁰ and
- Developing insurance coverage requirements for personal and commercial CAV operations, as part of pilot programs and regular use, as well as defining incident responsibility and liability.⁴¹

So, when can Canadians and AV industry stakeholders expect an established liability regime to materialize? An October 2020 report published by Ontario’s Autonomous

33 Ministry of Transportation, “Ontario’s Automated Vehicle Pilot Program” online: <http://www.mto.gov.on.ca/english/vehicles/automated-vehicles.shtml>. [Automated Vehicle Pilot Program]. SAE Level 4 is “High Driving Automation”, where “The sustained and ODD-specific performance by an ADS of the entire DDT and DDT fallback without any expectation that a user will respond to a request to intervene.”

34 Ibid. SAE Level 5 is “Full Driving Automation”, where “The sustained and unconditional (i.e., not ODD-specific) performance by an ADS of the entire DDT and DDT fallback without any expectation that a user will respond to a request to intervene.”

35 Canadian Council of Motor Transportation Administrators, “Canadian Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles: Automated Driving System Levels 3-4-5” (June 2018) at 65. Available from: <https://ccmta.ca/en/reports-publications/category/automated-and-connected-vehicles>.

36 Automated Vehicle Pilot Program supra note 10. SAE Level 3 is “conditional automation”, where the driver is a necessity, but not required to monitor the environment.

37 Ministry of Transportation, Ontario’s Automated Vehicle Pilot Program [Internet]. 2019. Available from: <http://www.mto.gov.on.ca/english/vehicles/automatedvehicles.shtml>

38 Ministry of Transportation, CAV Readiness Plan (March 2020), at 23. Available from: <https://autonomoustransportation.ca/resources/>

39 Ibid at 35.

40 Ibid at 38.

41 Ibid at 43.



Vehicle Innovation Network (AVIN) and Deloitte predicts that “the introduction of new legislation specific to the automotive and mobility landscape (e.g., liability and insurance models as well as privacy requirements) ... will come into force in the next 4-5 years and beyond”, following the current period of privacy legislative updates and AV testing.⁴² For now, no established legislative framework for liability in Canada exists.

As our understanding of key issues develops through testing and technological advancements over time, so too will our understanding of potential exposure to liability.

Data privacy and security

Canada’s national and provincial data protection laws are principles-based and provide a pragmatic and flexible framework that attempts to balance the right of an individual to control the collection, use, disclosure and retention of their personal data with the legitimate business interests of organizations that seek to use that personal data. In Canada, there are separate laws regarding the collection, use and disclosure of personal data in the private sector, the public sector as well as the healthcare sector.

The federal Personal Information Protection and Electronic Documents Act (SC 2000, c 5), commonly known as PIPEDA, applies to the collection, use and disclosure of personal data (referred to as “personal information” in Canadian legislation) by private sector organizations in the course of commercial activities.

British Columbia, Alberta and Quebec have enacted private sector statutes substantially similar to PIPEDA. Where an activity involving personal data takes place wholly within a province, provincial privacy legislation will apply. Where no provincial privacy legislation exists, or where personal data crosses provincial or international borders, PIPEDA will apply. Original equipment manufacturers, technology companies

and other private sector organizations involved in autonomous vehicles will be subject to PIPEDA and/or one of the provincial statutes.

Every jurisdiction in Canada has enacted public sector privacy legislation. Federally, the Privacy Act (RSC 1985, c P-21) governs the collection, use and storage of personal data by federal public sector organizations. This legislation applies to government ministries, institutions and agencies of the federal government, such as Transport Canada. Each province has similar legislation governing the collection, storage and use of personal data in the provincial public sector, which includes municipalities. Public sector entities responsible for the infrastructure around autonomous vehicles will be subject to public sector statute.

In the case of public-private partnerships or other consortium-based activities, the individual participating entities will each be governed by different privacy legislation.

Private sector privacy laws are consent-based, meaning that subject to limited exceptions, private sector organizations must obtain consent (implied or express, depending on a number of factors) from individuals for the collection, use and disclosure of their personal information. In order for consent to be valid, it must be reasonable to expect that individuals would understand the nature, purpose and consequences of the collection, use or disclosure of the personal information to which they are consenting. In other words, even if an organization obtained consent, organizations may collect, use and disclose personal information only for purposes that a reasonable person would consider is appropriate given the circumstances. For example, collecting the number of passengers in an autonomous vehicle for the purpose of safety measures would be reasonable; whereas collecting passenger ethnicity for the purposes of serving advertisements via the infotainment system may be found unreasonable.

⁴² AVIN “ecosystem analysis and roadmap 2020: Strengths, challenges, and opportunities across Ontario’s automotive and mobility ecosystem ” online: [https://oce-ontario.org/docs/default-source/publications/fy2018-2019-oce-avin-annual-report_final-\(2019-06-28\).pdf?sfvrsn=2](https://oce-ontario.org/docs/default-source/publications/fy2018-2019-oce-avin-annual-report_final-(2019-06-28).pdf?sfvrsn=2) at 64. AVIN is an organization led by the Ontario Ministry of Excellence, and supported by the Government of Ontario’s Ministry of Economic Development, Job Creation and Trade (MEDJCT) and Ministry of Transportation (MTO).



For public sector bodies, all jurisdictions in Canada link the collection of personal information to a purpose. Public sector institutions may not collect personal information unless the purpose for such collection is one enumerated in the organization's applicable statute. For the most part, the permissible purposes for collection fall into three general categories:

- The information collection activity is expressly authorized by the statute;
- The information relates directly to and is necessary for the operating program or activity of that public body; and
- The information is collected for law enforcement.

As a result, public bodies such as municipalities or electricity distributors may only collect the personal information necessary in order to provide the autonomous vehicle services.

Privacy laws do not prescribe how often information can be accessed. Generally, control of access is regarded as a safeguard measure, where access is limited to authorized individuals who require access in order to perform their obligations. This is generally stipulated in internal policies and procedures, as well as set out in contractual arrangements between parties, including between a public sector body and privacy sector organization.

PIPEDA and provincial private sector statutes require organizations to implement safeguards that are appropriate to the sensitivity of the personal information. Safeguards should include physical, technical and administrative controls to prevent loss or unauthorized access to or modification or disclosure of personal information. These safeguards should contemplate the secure transmission and storage of personal information.

Under public sector legislation, many jurisdictions have formal requirements whereby the public body is to establish and maintain appropriate safeguards against such risks as accidental loss or alteration, and unauthorized access, collection, use, disclosure or disposal.

Personal information collected by an institution that is subject to the provincial public sector privacy law in

British Columbia or Nova Scotia may not transfer that personal information outside Canada or otherwise allow access to that personal information from outside Canada, subject to certain exceptions. Therefore, a private sector company, such as a cloud-based service or vehicle manufacturer working with the public sector in British Columbia or Nova Scotia may be prohibited from storing personal information outside of Canada. Additionally, many provincial and federal public sector bodies have formal policies requiring data localization of personal information and in some cases, information generally.

Under private sector and public sector data protection legislation, individuals have a right to access the information held about them. The maximum period that organizations have to respond varies. Under PIPEDA, responses to such requests must be within 30 days. This timeline can be extended in certain cases. All access provisions contain exceptions. For example, under PIPEDA, access may be refused if providing access would reveal confidential commercial information, or providing access could reasonably be expected to threaten the life or security of another individual, or if data was generated in the course of a formal dispute process.

Currently, Canadian legislation does not contain an express right to erasure; however, an individual may withdraw their consent to the processing of his or her personal data under Canadian private sector legislation. If there is no further legitimate purpose for which the personal data can be lawfully retained, this may involve the requirement to delete the personal information.

Further, individuals have the right to correct their personal information under most Canadian privacy statutes. The right to correction may also include the right to have incorrect data deleted or noted as being in dispute. The rights are subject to any statutory requirements that may impose retention periods, preventing a request for delete. Notably, data that has been aggregated or anonymized does not need to be deleted.

There are no specific Internet of things (IoT) statutes that govern consumer data. The data collected by IoT would be governed by either the private sector regime or public sector regime, or both, depending on the organizations involved, the data and the



purpose. In August 2020, the federal Office of the Privacy Commissioner of Canada released its guidance for manufacturers of IoT devices, which includes guidelines on obtaining consent, transparency on data processing and best practices around limiting collection of information.⁴³

Canada's private sector privacy regime is currently being overhauled, with new modernized statutes expected to come into force in late 2021 and 2022. On November 11, 2020, Canada's Minister of Innovation, Science and Industry, Navdeep Bains, introduced Bill C-11 for the Digital Charter Implementation Act, 2020 ('DCIA'). Bill C-11 aims to modernize the framework for the protection of personal information in the private sector and provide individuals with greater control over their information. Bill C-11 consists of two parts – Part 1, which would enact the new Consumer Privacy Protection Act (CPPA), and Part II, which would enact the legislation to establish the Personal Information and Data Protection Tribunal (Tribunal). It also incorporates previous amendments made to PIPEDA in 2015 via the Digital Privacy Act. The current PIPEDA would continue to exist, but it would be focused on the electronic documents aspect of e-commerce.

Of note, Bill C-11 introduce a definition of what it means to de-identify personal information, which means to modify personal information, or create information from personal information, by using technical processes to ensure that the information does not identify an individual or could not be used in reasonably foreseeable circumstances, alone or in combination with other information, to identify an individual. Organizations could use personal information that has been de-identified without consent for a socially beneficial purpose to a government institution (or part of a government institution in Canada), a health care institution, post-secondary educational institution or public library in Canada or to any organization that is mandated, under a federal or provincial law or by contract with a government institution or part of a government institution in Canada. The notion of

"socially beneficial purpose" is defined in the CPPA as a purpose related to health, the provision or improvement of public amenities or infrastructure, the protection of the environment or any other prescribed purpose. Minister Bains has stated that this provision is to encourage the use of data trusts by public and private stakeholders, given the expected increase in smart city and autonomous vehicle initiatives.

In addition to Bill C-11, the provinces of Quebec, British Columbia and Ontario are in various stages of the legislative process to overhaul their respective provincial privacy laws. Bill C-11 and the proposed provincial statutes are largely inspired by the E.U.'s General Data Protection Regulations (GDPR). It is widely believed that Bill C-11 and the provincial statutes will move through the legislative process quickly, with bipartisan support.

Canada has not yet enacted cybersecurity legislation. However, the Government of Canada has been active in promoting cybersecurity. Public Safety Canada is mandated to keep Canadians safe from a range of risks and manages the Canadian Cyber Incident Response Centre. Many government agencies are responsible for enforcing cybersecurity rules within their jurisdiction, including, but not limited to, law enforcement, Public Safety Canada, the Communications Security Establishment, the Royal Canadian Mounted Police, the Canadian Security Intelligence Service and the Office of the Privacy Commissioner of Canada.

Finally, Transport Canada included cybersecurity and data management policy guidance in its report *Safety Assessment for Automated Driving Systems in Canada* to assist developers of automated driving systems.

Telecommunications and 5G

The government of Canada recognizes that the development and deployment of 5G and next-generation networks is essential to Canada becoming a global center for wireless innovation and for ensuring that Canada is at the forefront of digital development and that Canadians have access to world-leading wireless infrastructure.

⁴³ The Office of the Privacy Commissioner of Canada, Privacy guidance for manufacturers of Internet of Things devices, issued August 2020, available at: https://www.priv.gc.ca/en/privacy-topics/technology/gd_iot_man/



The Government of Canada has incentivized 5G and next-generation network technology and investment by releasing licenced and licence-exempt spectrum⁴⁴ and making strategic investments in 5G technologies and infrastructure.⁴⁵ That being said, as it relates to vehicle communication, ISED has not taken a position on whether it prefers dedicated short-range communication (DSRC) or cellular vehicle-to-everything (C-V2X).

The 5850-5925 MHz band has been specifically designated for use by DSRC for developmental purposes⁴⁶ in support of ITS.⁴⁷ While the band has not been designated for use by C-V2X, ISED recognizes that C-V2X is gaining traction internationally and has indicated that it would be possible to use C-V2X in the 5850-5925 MHz band.⁴⁸

Equipment in the band operates on a license-exempt basis. ISED has elected to wait to make any changes in the 5GHz band until the future international approach to the band and ITS becomes more clear.⁴⁹

COVID-19 impact

Like many businesses, the public health and economic repercussions of the COVID-19 crisis has negatively affected AV companies operating in Canada, resulting in lay-offs, delays in product launches, and setbacks to the work of pilots.⁵⁰ Of particular note, Google-affiliated Sidewalk Lab's proposed 12-acre smart neighborhood within the City of Toronto, in which autonomous vehicles would have played a prominent role, was cancelled, in part, due to economic uncertainty caused by the pandemic.⁵¹

- 44 ISED, "Consultation on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band," (November 2020), Gazette Notice No. SMSE-014-20, online: < <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11643.html>>; ISED, "Consultation on the Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band" (August 2020) SLPB-002-20 (i.e., 3800 MHz spectrum), online: < <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11627.html>>; ISED, "Policy and Licensing Framework for Spectrum in the 3500 MHz Band," (March 2020) SLPB-001-20, online: < <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11584.html>>; ISED, "Decision on Revisions to the 3500 MHz Band to Accommodate Flexible Use and Preliminary Decisions on Changes to the 3800 MHz Band" (June 2019) SLPB-001-19, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-00119EN.pdf/\\$file/SLPB-001-19EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-00119EN.pdf/$file/SLPB-001-19EN.pdf)>; ISED, "Consultation on Revisions to 3500 MHz Band to Accommodate Flexible Use and Preliminary Consultation on Changes to the 3800 MHz Band" (June 2018) SLPB-004-28 at 1-6, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/3500-Consultation02-2018-EN.pdf/\\$file/3500-Consultation02-2018-EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/3500-Consultation02-2018-EN.pdf/$file/3500-Consultation02-2018-EN.pdf)>; ISED, "Technical, Policy and Licensing Framework for Spectrum in the 600 MHz Band" (March 2018) SLPB-002-18 at 6, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-002-18-600MHz-decision-e.pdf/\\$file/SLPB-002-18-600MHz-decision-e.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-002-18-600MHz-decision-e.pdf/$file/SLPB-002-18-600MHz-decision-e.pdf)>; ISED, "Consultation on Releasing Millimetre Wave Spectrum to Support 5G" (June 2017) SLPB-001-17, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/slpb-001-17-5G.pdf/\\$file/slpb-001-17-5G.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/slpb-001-17-5G.pdf/$file/slpb-001-17-5G.pdf)>; ISED, "Addendum to the Consultation on Releasing Millimetre Wave Spectrum to Support 5G" (June 2018) SLPB-005-18, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/Addendum-2018-EN.pdf/\\$file/Addendum-2018-EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/Addendum-2018-EN.pdf/$file/Addendum-2018-EN.pdf)>; ISED, "Decision on Releasing Millimetre Wave Spectrum to Support 5G" (June 2019) SLPB-003-19, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-003-19EN.pdf/\\$file/SLPB-003-19EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/SLPB-003-19EN.pdf/$file/SLPB-003-19EN.pdf)>.
- 45 Government of Canada, "Government of Canada invests in research and development for technologies behind 5G networks" (25 January 2019), online: < <https://www.canada.ca/en/innovation-science-economic-development/news/2019/01/government-of-canada-invests-in-research-and-development-for-technologies-behind-5g-networks.html>> [Nokia Investment in 5G]; ISED, "Building a Nation of Innovators" (2019) at 55, online: < [https://www.ic.gc.ca/eic/site/062.nsf/vwapj/ISED_19-044_INNOVATION-SKILLS_E_web.pdf/\\$file/ISED_19-044_INNOVATION-SKILLS_E_web.pdf](https://www.ic.gc.ca/eic/site/062.nsf/vwapj/ISED_19-044_INNOVATION-SKILLS_E_web.pdf/$file/ISED_19-044_INNOVATION-SKILLS_E_web.pdf)> ["Building a Nation of Innovators"]; Huawei, "Huawei Canada Partners with Ontario Government to Hire Hundreds of Research Engineers" (8 March 2016), online: < <https://www.huawei.com/ca/news/ca-en/20160308huawei-canada-partners-with-ontario-government>>; Polytechnique Montréal, "Polytechnique Montréal and Huawei Canada establish the Industrial Research Chair in Future Wireless Technologies" (10 February 2017), online: < <https://www.polymtl.ca/carrefour-actualite/en/news/polytechnique-montreal-and-huawei-canada-establish-industrial-research-chair-future-wireless>>.
- 46 ISED expects this designation will be made permanent in a future spectrum allocation decision, the date of which is presently unknown.
- 47 ISED, "Spectrum Outlook 2018 to 2022" (6 June 2019) SLPB-003-18 at paras 177 and 180, online: < <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11403.html>>; ISED, SAB-001-17 - Displacement of Existing Fixed Service Assignments in the Frequency Band 5850-5925 MHz, February 2017, < <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11264.html>>.
- 48 ISED, "Spectrum Outlook 2018 to 2022" (6 June 2019) SLPB-003-18 at para 181, online: < <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11403.html>>; Testing of C-V2X has also been done with cellular providers using cellular bands.
- 49 ISED, Spectrum Outlook 2018-2022, at 31, online: < [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/Outlook-2018-EN.pdf/\\$file/Outlook-2018-EN.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/Outlook-2018-EN.pdf/$file/Outlook-2018-EN.pdf)>.
- 50 Autonomous Vehicle Innovation Network, "The Auto Sector and the COVID-19 Pandemic: Recovery Support and Opportunities" (June 2020), online: < https://oce-ontario.org/docs/default-source/publications/avin_quarterly-specialized-report_june-2020.pdf?sfvrsn=2>; Electric Autonomy Canada, "AV shuttle pilots in Toronto and Whitby and new investment in Ottawa's AV research facility will help advance the province's position in driverless technology and services" (28 October 2020), online < <https://electricautonomy.ca/2020/10/28/av-shuttle-pilots-ontario/>>; Electric Autonomy Canada, "Exit Sidewalk Labs, enter COVID-19: what impact on autonomous vehicles in Canada?" (21 May 2020), online: < <https://electricautonomy.ca/2020/05/21/exit-sidewalk-labs-enter-covid-autonomous-vehicles-in-canada/>>.
- 51 Sidewalk Labs, "Why we're no longer pursuing the Quayside project — and what's next for Sidewalk Labs" (7 May 2020), online: < <https://medium.com/sidewalk-talk/why-were-no-longer-pursuing-the-quayside-project-and-what-s-next-for-sidewalk-labs-9a61de3fee3a>>.



However, despite setbacks, proponents argue that the Canadian AV industry's outlook remains strong given Canada's significant automotive and technological capacity.⁵² Further, to capitalize the urgent need to reduce human contact to fight COVID-19 and to survive the economic tumult caused by shutdowns, a number of AV companies have launched new offerings and entered new markets. Of note, AV companies offering contactless short-haul logistic services, such as the

delivery of medicines, merchandise and food, have seen increased business interest and investment in light of COVID-imposed delivery constraints.⁵³

To date, COVID-19 has not materially altered AV politics in Canada, for instance, by encouraging AV-specific stimulus spending or encouraging governments to introduce overarching legislation for AVs.



52 Information and Communications Technology Council, "Advances in Connected and Autonomous Vehicles: Current State and Future Trends" (March 2020), online: <https://www.ictc-ctic.ca/wp-content/uploads/2020/04/CAVs-ENG.Final_.0423.pdf>; Toronto Region Board of Trade, "Getting Ready for Autonomy: AVs for Safe, Clean and Inclusive Mobility in the Toronto Region" (March 2020), online: <https://www.bot.com/Portals/0/NewsDocuments/TRBOT_AV_Report_FINAL_LR.pdf>. Electric Autonomy Canada, "Exit Sidewalk Labs, enter COVID-19: what impact on autonomous vehicles in Canada?" (21 May 2020), online: <<https://electricautonomy.ca/2020/05/21/exit-sidewalk-labs-enter-covid-autonomous-vehicles-in-canada/>>

53 Autonomous Vehicle Innovation Network, "The Auto Sector and the COVID-19 Pandemic: Recovery Support and Opportunities" (June 2020), online: <https://oce-ontario.org/docs/default-source/publications/avin_quarterly-specialized-report_june-2020.pdf?sfvrsn=2>; Electric Autonomy Canada, "Canada Pension Plan, Magna make major investments in self-driving firm Waymo" (6 March 2020), online: <<https://electricautonomy.ca/2020/03/06/canada-pension-plan-magna-invest-in-self-driving-firm-waymo/>>.



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