

Automated Vehicles Readiness Schedule and Budget 2020-22

October 2019

What is AV Readiness 2022?

The Automated Vehicles Tactical Plan aims to prepare the City of Toronto for a massive shift in the transportation system as we know it over a span of three to thirty years. However, action needs to be taken today to ensure that Toronto remains ahead of this technology, and at pace with international development.

The City is taking a proactive, transit-centric approach to automation that recognizes the significant investments within the region, as well as the regulatory guidelines and changes at both the provincial and federal levels. The Province of Ontario recently updated its automated vehicle pilot program to allow for driverless vehicle testing, and commercial sale of level 3 automated vehicles. The City needs to be ready to respond to impacts and related events from this technology hitting Toronto's streets.

This is just one of many examples of AV development already underway. AV Readiness 2022 is Toronto's opportunity to get ahead of this transformation. The five projects outlined in this section will ensure that the City is able to keep up with other municipalities; to catalyze the synergies between enhanced public services and new private innovations; and to stay ahead of further developments and long-term potential impacts from automated vehicles (i.e. land use, parking, etc.).

This section sets the foundation for Toronto to ensure that any significant changes related to this technology, will not come as a surprise to City government, or Torontonians.

AV Readiness 2022 is defined by the following five projects:

1. Automated Shuttle Trial
2. Transportation Innovation Zones
3. Testing Response & Incident Preparedness (TRIP)
4. Human Learning
5. Research & Development Program

Project Summaries

1. Automated Shuttle Trial

“The first driverless ride experienced by a Toronto resident will be in a transit vehicle.”

The Automated Shuttle Trial project aims to enhance this transit-centric approach by addressing gaps in the current transportation system, particularly first-mile/last-mile connections to rapid transit stations in suburban areas. This project proposes that an automated shuttle service be provided to riders as a full part of the transit network and in mixed traffic. The City of Toronto is working with the Toronto Transit Commission and Metrolinx to incorporate this innovative technology into the regional transit network for a trial period, to learn about some of the opportunities and challenges that it may present. Funding for the Trial has been provided by Transport Canada.

The Trial is proposed to connect the West Rouge neighbourhood to the Rouge Hill GO Transit station starting in September 2020. At a minimum, the Shuttle will provide a commuter service timed to transport passengers from the neighbourhood to the station to meet commuter rail service in the morning, and timed to meet trains and provide the reverse trip in the afternoon. This service will be provided for at least six months with no fare required to ride the Shuttle.

More information: Automated Vehicles Tactical Plan, Part IV, pp. 123

2. Transportation Innovation Zones

A dedicated place to learn about the technology and its relationship to the transportation system; allowing for quick trials and demonstration projects.

A Transportation Innovation Zone framework will set the course for facilitating private-sector led transportation technology trials that are both backed by the public and have the potential to support existing City priorities. Specifically, the Framework will propose (a) a fair and transparent process for receiving and assessing requests from the private sector, (b) an approach to obtain proactive expressions of interest from the public and stakeholders in potential Innovation Zones, and (c) a process to streamline approvals by obtaining Council approval for select testing activities in Innovation Zones.

More information: Automated Vehicles Tactical Plan, Part IV, pp. 124

3. Testing Response & Incident Preparedness (TRIP)

Ensure first responders and law enforcement are prepared for automated vehicle testing that occurs on Toronto streets.

The City of Toronto is working to ensure that it is prepared to both receive location notifications and work zone/ law enforcement interaction plans from organizations testing automated vehicles under Ontario's Pilot Project – Automated Vehicles, while also addressing the impact of these notifications on City services. Testing Response & Incident Preparedness (TRIP) is an administrative system and series of response protocols to better manage automated vehicle testing that occurs on Toronto streets, and to ensure that first responders and law enforcement are prepared for this technology.

More information: Automated Vehicles Tactical Plan, Part IV, pp. 125

4. Human Learning

Create an information hub for public learning and engagement on AVs.

A centralized discovery and learning mechanism could provide a neutral voice for the public that addresses all of the concerns and opportunities across key players, in relation to automated vehicles. This project will ensure that the public knows how to interact with automated vehicles both as direct users and as sharers of space. A third-party group that can broker funding and messaging across government and industry is the ideal mechanism for the development of this project. Early education will focus on what is an automated vehicle, the importance of avoiding distraction with automated features, and how drivers and vulnerable road users should interact with AVs.

More information: Automated Vehicles Tactical Plan, Part IV, pp. 126

5. Research & Development Program

Foster research and development to solve current transportation-related challenges using automated technologies.

Over the next three years, the City's AV Research & Development Program will investigate a number of issues and applications related to automated vehicles, including the following:

- Integration of automated vehicle considerations into existing work in healthy mobility, high occupancy vehicle prioritization, and management of curbsides, parking, demand, and supply;
- Development of data privacy standards, governance, oversight, and protections;
- Research, development, analysis, and consultation on the integration of automation into City of Toronto fleet vehicles to support increased safety for staff and other road users, increased effectiveness of service delivery, and operational changes required to manage fueling, contracts, and data collection;
- The potential for automated sidewalk snow clearing in areas that do not currently receive mechanical snow clearing (primarily Toronto & East York);
- A new multimodal level of service for measuring the performance of a given street or network;
- Development of capacity for strategic foresight in broader societal trends and changes that could accelerate, decelerate, or shift the adoption of automated vehicles.
- Potential impacts of automated vehicles on land use planning regulations, standards, and guidelines.
- Potential impacts of automated vehicles on parking demand.
- Potential impacts of automated vehicles and other technologies, such as three-dimensional printing, of mobile food production and manufacturing.
- Potential impacts of the provision of mobility services by a smaller number of globalized companies on the local mobility marketplace.

More information: Automated Vehicles Tactical Plan, Part IV, pp. 127

AV Readiness 2022 Schedule Summary

Project	Proposed Progress to 2022
1. Automated Shuttle Trial	
<ul style="list-style-type: none"> 1.2.1 – Equitable Service Coverage 	Identify areas in Toronto with lower mobility service coverage and research the potential impacts to frequency, hours of service, and proximity across neighbourhoods from AVs.
<ul style="list-style-type: none"> 3.1.1 – Expand Investment and Employment 	Partner with Toronto Global – the regional investment attraction agency – to research and learn about opportunities to expand sectors related to AVs.
<ul style="list-style-type: none"> 3.3.1 – Global Competitiveness 	Develop an economic development strategy to make Toronto a hub for automated transit vehicle technology.
<ul style="list-style-type: none"> 3.3.2 – Cross-Sector Collaboration 	Implement an initiative to foster collaboration among the AV cluster.
<ul style="list-style-type: none"> 4.1.2 – Privacy Standards: Automated Transit Vehicles 	Research and learn more about the privacy impacts for automated transit vehicles.
<ul style="list-style-type: none"> 4.1.6 – Privacy Attestation Services 	Develop a minimum data privacy protection standard for the City to undertake.
<ul style="list-style-type: none"> 5.1.2 – Transition to AVs – Transit 	Use learning from the testing of Driver Safety Assistance Technology, and the AV transit shuttle pilot to conduct research, and identify policy options for educating operators and riders on how to use and interact with these vehicles.
<ul style="list-style-type: none"> 6.3.2 – Microtransit 	Evaluate the success of the Minding the Gap automated shuttle pilot project, which will run from 2020-2021.
2. Transportation Innovation Zones	
<ul style="list-style-type: none"> 3.1.2 – Testing Sandbox 	Develop and implement an innovation corridor and innovation zones to accelerate proof-of-concept pilots.
<ul style="list-style-type: none"> 5.1.5 – Vehicle Collisions-Data Redundancy 	Design a process to provide all traffic regulations, in real-time where possible, through the City's Open Data Portal to assist in the fault-free operation of automated driving systems.
<ul style="list-style-type: none"> 5.2.1 – AV Integration 	Work with the Ontario Good Roads Association (MACAVO) and neighbouring municipalities to identify and implement a corridor within Toronto that can be used for early integration of AVs - that will promote innovation in transportation and standardization across municipalities.
<ul style="list-style-type: none"> 5.2.2 – AV Integration-Transit 	Review incident data, conduct industry research, and evaluate Driver Safety Assistance Technology to determine procurement needs. Host a vendor day to learn more about the products and develop a business case for procurement. Install, implement and test success of equipment, while evaluating if or when rollout should be extended to the entire fleet.
<ul style="list-style-type: none"> 5.2.3 – AV Integration-Connected Vehicles 	Coordinate the secure integration of connected vehicles into Toronto's transportation system, with the Congestion Management Plan. Design and develop an AV-specific strategy for these vehicles that is consistent with the Plan.
<ul style="list-style-type: none"> 5.2.4 – New and Revised Standards 	Produce a white paper exploring potential updates to maintenance and design standards with the introduction of AVs - and generate policy options for changes to Toronto's existing standards.

Project	Proposed Progress to 2022
<ul style="list-style-type: none"> 5.3.1 – Emergencies-Vehicle Priority 	Collaborate with industry and study the potential opportunities for AV yielding to emergency vehicles. Generate policy options for the City's emergency service divisions to take advantage of any potential opportunities - to be included in a white paper for 2022.
<ul style="list-style-type: none"> 6.1.1 – Transit Priority 	Research and learn about AV technology potential to provide transit priority and isolate corridors for potential integration. Coordinate with the Toronto Transit Commission to ensure that work on transit priority for Toronto's surface transit network is considered in the development of this Tactic. Incorporate policy options based on stakeholder input into a white paper for 2022.
<ul style="list-style-type: none"> 6.1.2 – Active Transportation Priority 	Study the potential impacts to active transportation with the introduction of private and public automated vehicles. Generate policy options to be included in a white paper for 2022 that will address how walking and biking will remain a priority alongside AV infrastructure upgrades.
<ul style="list-style-type: none"> 6.1.4 – Urban Goods Movement 	Coordinate the management of urban goods movement in AVs with the City's Goods Movement Strategy. Consult with relevant stakeholders on potential issues, priority concerns and opportunities, and the City's role in its development.
<ul style="list-style-type: none"> 6.2.1 – Street Design 	Study the unique needs and challenges of AVs on Toronto's street design. Consult with stakeholders on potential issues and opportunities.
<ul style="list-style-type: none"> 6.2.2 – Road Classification & Use 	Study potential opportunities and issues with using local streets as a facilitator for vehicular access to buildings.
<ul style="list-style-type: none"> 6.2.3 – Flexible Curbs 	Create policy options to optimize the use of the curb for AVs over the course of a day - to be included in a white paper for 2022.
<ul style="list-style-type: none"> 7.1.3 – Designated Loading Areas 	Research, identify and assess potential options to designate AV loading and unloading areas in Toronto. Select a preferred solution to be designed in the next phase of this Plan.
3. Testing Response & Incident Preparedness (TRIP)	
<ul style="list-style-type: none"> 5.3.2 – Emergency Response Policies 	Consider the City's existing Emergency Response Policies, and study potential updates that will need to be incorporated with the introduction of AVs. Incorporate policy options and Standard Operating Guidelines into a white paper for 2022.
<ul style="list-style-type: none"> 5.3.3 – Emergency Response Protocols and Training 	Develop a Standard Operating Guideline for emergency response dealing with protocols and training for incidents involving AVs. This guideline will include appropriate training methods/ materials such as: detailed training notes, online modules, or other materials designed from industry content, and will assess the opportunity for hands-on training in an AV.
<ul style="list-style-type: none"> 5.3.4 – Enforcement 	Scope a framework to capture desired enforcement analytics. Collaborate with the provincial government to distinguish types of AV vehicles on the road, and potential issues that will arise for enforcement of these vehicles.
<ul style="list-style-type: none"> 5.3.5 – Emergencies-Shared AV Fleets 	Conduct research to better understand potential safety issues and emergency response needs and opportunities associated with shared AV fleet services.
4. Human Learning	
<ul style="list-style-type: none"> 4.1.3 – Privacy Standards: Shared AV Fleets 	Research and learn more about the privacy impacts for shared AV fleet consumers.
<ul style="list-style-type: none"> 5.1.1 – Transition to AVs 	Develop materials, and host sessions to educate the public on automated vehicles and how to interact safely with them. Engage with relevant stakeholders to update regulatory

Project	Proposed Progress to 2022
	and enforcement processes as it relates to AVs and begin implementation of these changes.
5. Research & Development Program	
<ul style="list-style-type: none"> 1.1.1 – Access for Individuals with Disabilities 	Research, learn and identify challenges that individuals with disabilities may face in accessing barrier-free services likely to be provided by shared AV fleet companies.
<ul style="list-style-type: none"> 1.1.2 – Access to Transit for Individuals with Disabilities 	Use lessons learned from automated transit shuttle pilot to inform further research into accessible automated transit vehicles.
<ul style="list-style-type: none"> 1.1.3 – Access for Unbanked Individuals 	Engage stakeholders with regard to barriers that unbanked individuals may face in accessing services provided by shared AV fleet companies.
<ul style="list-style-type: none"> 1.1.4 – Access for Low-Income Individuals 	Research and document the potential impacts to low-income residents from the introduction of automated vehicles.
<ul style="list-style-type: none"> 1.1.5 – Access for Non-Anglophones 	Research and document the potential impacts to non-Anglophone populations from the introduction of automated vehicles.
<ul style="list-style-type: none"> 1.2.2 – Equitable Performance Standards 	Research, learn and identify potential equity issues related to services provided by shared AV fleet companies.
<ul style="list-style-type: none"> 1.2.3 – Mobility Neutrality 	Produce a white paper exploring the impacts of tiered product or service offerings involving AVs and generate policy options on how to prevent select vehicles from receiving unregulated priority within Toronto's transportation system.
<ul style="list-style-type: none"> 1.3.1 – Healthy Mobility 	Consult with internal stakeholders to review and summarize available City data that is relevant to applying a health equity lens to the AV Tactical Plan. Identify gaps in available information and determine options to address those gaps. Engage external consultant to recommend healthy mobility key performance indicators, and to begin collecting and analyzing baseline data to apply a health lens to AVs.
<ul style="list-style-type: none"> 2.1.1 – Low or Zero-Carbon Energy Sources 	Coordinate the incentivization of low or zero-carbon AVs with the City's work on electric mobility. Design and develop an AV-specific strategy for these vehicles that is consistent with TransformTO.
<ul style="list-style-type: none"> 2.1.2 – Low or Zero-Carbon Energy Sources for Shared AV Fleets 	Research, learn and identify potential issues surrounding the use of low- or zero-carbon vehicles by shared AV fleet companies.
<ul style="list-style-type: none"> 2.2.1 – Vehicle Waste Reduction 	Research, learn and identify the environmental and waste impacts associated with the lifecycle of automated vehicles.
<ul style="list-style-type: none"> 2.2.2 – Vehicle Waste Reduction for Automated Transit Vehicles 	Research, learn and identify the environmental and waste impacts associated with the lifecycle of automated transit vehicles.
<ul style="list-style-type: none"> 2.2.3 – Vehicle Waste Reduction for Shared AV Fleets 	Research, learn and identify the environmental and waste impacts associated with the lifecycle of vehicles used by shared AV fleet companies.
<ul style="list-style-type: none"> 3.2.1 – Talent Development 	Evaluate effectiveness of mechanisms for increasing the talent pool supporting the automated vehicle cluster.
<ul style="list-style-type: none"> 3.2.2 – Workforce Reskilling 	Monitor workforce and social assistance impacts and work with partners – in government, postsecondary, labour unions and private sectors – to connect Toronto residents to training and reskilling opportunities.
<ul style="list-style-type: none"> 3.2.3 – Community Benefits 	Use the City's Community Benefits Framework (forthcoming) to guide how to leverage community benefits through large transit projects, and infrastructure developments.

Project	Proposed Progress to 2022
<ul style="list-style-type: none"> 4.1.1 – Data Privacy Standards 	<p>The City will develop a policy framework to address privacy aspects as it relates to the ownership, custody and usage of personally identifiable data captured from AVs, as well as corporate procurement standards.</p>
<ul style="list-style-type: none"> 4.1.4 – Privacy Governance and Oversight 	<p>Develop an AV enterprise assurance framework for the City to implement as it relates to their authority over, and oversight of data privacy protection.</p>
<ul style="list-style-type: none"> 4.1.5 – Privacy by Default 	<p>Design and develop a mechanism that will determine if and how Privacy by Default principles are embedded into AV technology.</p>
<ul style="list-style-type: none"> 4.1.6 – Privacy Attestation Services 	<p>Develop a minimum data privacy protection standard for the City to undertake.</p>
<ul style="list-style-type: none"> 5.1.3 – Vehicle Collisions-Human Factors 	<p>Develop and test a mechanism that will determine if and how safety is improved with AVs as it relates to Vision Zero.</p>
<ul style="list-style-type: none"> 5.1.4 – Vehicle Collisions-Environmental Conditions 	<p>Develop and test a mechanism that will determine if and how safety is improved with AVs as it relates to Toronto's environmental conditions.</p>
<ul style="list-style-type: none"> 5.1.6 – Vulnerable Road Users 	<p>Research and identify preferred AV technologies that are proven to increase detection and communication with vulnerable road users.</p>
<ul style="list-style-type: none"> 5.1.7 – Reducing Traffic Infiltration 	<p>Collaborate with stakeholders and assess potential solutions to manage AV traffic infiltration on local streets.</p>
<ul style="list-style-type: none"> 5.1.8 – Shared AV Fleet Safety Standards 	<p>Conduct research to better understand potential safety issues associated with shared AV fleet services.</p>
<ul style="list-style-type: none"> 5.4.1. – Data Standards 	<p>Develop a policy framework to address security considerations regarding the ownership, custody and usage of data captured and collected from AVs. Participate in the development of an overarching AV cloud policy framework.</p>
<ul style="list-style-type: none"> 6.1.3 – High Occupancy AV Priority 	<p>Coordinate the development of HOV priority for AVs with the City's existing work on high-occupant vehicles. Explore options to implement policies for planning and infrastructure that consider AVs, and isolate a preferred solution based on the City's intended HOV goals.</p>
<ul style="list-style-type: none"> 6.1.4 – Urban Goods Movement 	<p>Coordinate the management of urban goods movement in AVs with the City's Goods Movement Strategy. Consult with relevant stakeholders on potential issues, priority concerns and opportunities, and the City's role in its development.</p>
<ul style="list-style-type: none"> 6.3.1 – Transit-Centric MaaS 	<p>Coordinate the development of Mobility-as-a-Service in relation to AVs with the City's existing work on MaaS, and fare integration in general. Consult with relevant stakeholders on potential issues, priority concerns and opportunities, and the City's role in its development.</p>
<ul style="list-style-type: none"> 7.1.1 – Transition to AVs-Traffic Flow 	<p>Identify potential options to manage the mix of varying levels of automation on Toronto's streets. Identify the optimal solution for Toronto based on research.</p>
<ul style="list-style-type: none"> 7.1.2 – Active Traffic Management & Coordination 	<p>Coordinate the development of a mechanism to increase throughput with the development of the 2021-25 Congestion Management Plan.</p>
<ul style="list-style-type: none"> 7.1.4 – Open Data 	<p>Continue adding transportation-related regulatory and traffic data sets to the City's Open Data Portal.</p>
<ul style="list-style-type: none"> 7.2.1 – Curbside Fee 	<p>Coordinate the development of curb management for AVs with the City's Curbside Management Strategy. Explore variable pricing options to manage demand from AVs (both personally owned and commercial), and isolate a preferred solution based on</p>

Project	Proposed Progress to 2022
	success from short-term curb management initiatives, and the City's intended focus for the medium-long term.
<ul style="list-style-type: none"> 7.2.2 – Transit Incentives and Pricing 	Use lessons learned from automated transit shuttle pilot to inform further research into the value proposition of automated transit, and research and identify other options.
<ul style="list-style-type: none"> 7.2.3 – Manage On-Street Parking Demand 	Monitor technological and policy developments in other jurisdictions which could inform the management of on-street parking in Toronto.
<ul style="list-style-type: none"> 7.2.4 – Manage Off-Street Parking 	Research, learn and identify externalized costs associated with off-street parking.
<ul style="list-style-type: none"> 7.2.5 – Manage the Peak 	Research and identify potential congestion issues during peak hours, arising from AVs.
<ul style="list-style-type: none"> 7.2.6 – Manage Travel Demand 	Study potential issues associated with zero-occupant vehicles. Engage stakeholders to identify potential solutions and begin generating options for the City of Toronto to implement if and when zero-occupant vehicles become prevalent.
<ul style="list-style-type: none"> PSV.1 – (Fleet Vehicle) Road Safety 	Research and learn about the safety impacts of integrating automation into City of Toronto fleet vehicles; and engage with relevant stakeholders to assess potential solutions – including availability of options, cost, liability and viability.
<ul style="list-style-type: none"> PSV.2 – (Fleet) Vehicle Effectiveness 	Engage and consult with industry stakeholders to assess the options available for procuring automated fleet vehicles. Assess the cost and operational effectiveness of these vehicles through stakeholder consultation.
<ul style="list-style-type: none"> PSV.3 – (Fleet) Vehicle Safety 	Research and learn about potential security issues associated with automated fleet vehicles. Engage and consult with stakeholders on safeguarding the operation and data security of these fleets, including coordinating with Provincial and Federal levels of government for direction on options, cost, liability and viability of vehicle security.
<ul style="list-style-type: none"> PSV.4 – (Fleet) Vehicle Fueling 	Analyze the existing fuel options available for public service vehicles. Research and learn about additional needs resulting from AVs and engage and consult with stakeholders on how to address this.
<ul style="list-style-type: none"> PSV.5 – AV Fleet-Transit 	Research and learn about add-on safety features available for bus and streetcar fleets. Assess available options and select a solution that can be tested in the short-term. Continue to study automated vehicle technology that improves safety in Toronto's TTC vehicle fleet.
<ul style="list-style-type: none"> PSV.6 – Non-Passenger AVs for City Services 	Assess potential non-passenger AV options available for City Services. Scope its viability, including an analysis of cost and operational effectiveness; and implement a solution for immediate City needs within the next three years. Test the success of an NPAV snowplow pilot.
<ul style="list-style-type: none"> PSV.7 – Contracted Service Vehicles 	Research and learn about the potential options to integrate AV technology into contracted vehicles during the contract term. Identify any potential issues that may arise in integrated this technology into a new term; and engage and consult with relevant stakeholders to discuss barriers and opportunities.
<ul style="list-style-type: none"> PSV.8 – Data Collection 	Research and learn about the potential safety, traffic management, transportation planning, asset management, and network security improvements that could arise from AV fleet data collection. Engage and consult with stakeholders, including the Provincial and Federal governments, to assess how to integrate a data collection mechanism that is cost effective, and secure.

Project	Proposed Progress to 2022
<ul style="list-style-type: none"> FP.1 – Travel Demand Modelling 	Research and develop tools to test emerging practices in updating travel demand models to accommodate AVs.
<ul style="list-style-type: none"> FP.2 – Building Standards 	Research and consider development of new or improved building standards that allow for flexibility in retrofitting buildings for future needs associated with AVs.
<ul style="list-style-type: none"> FP.3 – Planning and Investment 	Research emerging practices in updating forecasts and infrastructure investment decisions to accommodate future needs associated with AVs.
<ul style="list-style-type: none"> AR.1 – Multimodal Level of Service 	Develop and implement a mechanism to establish performance measures that ensure efficient movement of people and goods in an automated vehicle environment.
<ul style="list-style-type: none"> AR.2 – Land Use Planning 	Research potential impacts of automated vehicles on land use planning regulations, standards, and guidelines.
<ul style="list-style-type: none"> AR.3 – Parking Demand 	Research potential impacts of automated vehicles and emerging practices in updating parking demand forecasts and capacity requirements, as well as local parking authority services.
<ul style="list-style-type: none"> AR.4 – Strategic Foresight 	Research and forecast broader societal changes that could impact the transportation system.
<ul style="list-style-type: none"> AR.5 – Mobile Production 	Research potential impacts of AVs and mobile food preparation and manufacturing (e.g. 3D printing) and the City's ability to regulate these activities while taking place on moving vehicles.
<ul style="list-style-type: none"> AR.6 – Mobility Marketplace 	Research potential impacts of domination of the mobility marketplace by a small number of global providers and the City's ability to regulate or influence an appropriate level of competition and support for local companies.
Tactical Plan Data Governance	
<ul style="list-style-type: none"> GOV.1 – Collection of Data from Third Parties 	Develop and implement a policy and mechanism to collect data from automated vehicles using the transportation system. This data should support improved road safety, traffic management, transportation planning, asset management and transportation network security, consistent with Privacy by Design principles.
<ul style="list-style-type: none"> GOV.2 – Data Tools 	Develop and implement robust tools to support new data streams from automated and connected vehicles.
<ul style="list-style-type: none"> GOV.3 – Monitoring Indicators 	Develop and implement robust indicators to monitor the transition from human-driven vehicles to automated vehicles as well as their associated impacts on the transportation system and delivery of City of Toronto services.

AV Readiness 2022 Budget Summary

Project	Net Annual Budget			Total Budget
	2020	2021	2022	
1. Automated Shuttle Trial				
• 3.3.1 – Global Competitiveness [EDC]	\$0 [Funded]	-	-	\$0 [Funded]
• 6.3.2 – Microtransit [TS]	\$0 [Funded]	\$0 [Funded]	-	\$0 [Funded]
2. Transportation Innovation Zones				
• 3.1.2 – Testing Sandbox [TS]	\$150,000	-	-	\$150,000
• 5.2.1 – AV Integration [TS]	-	\$100,000	\$100,000	\$200,000
3. Testing Response & Incident Preparedness (TRIP)				
• 5.3 – Update Emergency Response	-	-	-	Staff Time Only
4. Human Learning				
• 5.1.1 – Transition to AVs [TS]	-	\$100,000	\$100,000	\$200,000
5. Research & Development Program				
• 6.1.3 – High Occupancy AV Priority [CP]	\$100,000	-	-	\$100,000
• 6.2.3 – Flexible Curbs [TS]	-	-	\$100,000	\$100,000
• 7.1.1 – Transition-Traffic Flow [TS]	-	\$100,000	\$100,000	\$200,000
• 7.2.4 – Manage Off-Street Parking [CP]	-	-	\$100,000	\$100,000
• 7.2.6 – Manage Travel Demand [TS]	-	\$100,000	\$100,000	\$200,000
• PSV.6 – NPAVs for City Services [TS]	-	\$200,000	\$300,000	\$500,000
• FP.1 – Travel Demand Modelling [CP]	\$50,000	-	-	\$50,000
• FP.2 – Building Standards [CP]	-	-	\$50,000	\$50,000
• FP.3 – Planning and Investment [CP]	-	\$100,000	-	\$100,000
• AR.2 – Land Use Planning [CP]	-	\$100,000	\$100,000	\$200,000
• AR.3 – Parking Demand [CP]	\$100,000	\$100,000	-	\$200,000
• GOV.3 – Monitoring Indicators [TS]	\$50,000	\$50,000	\$50,000	\$150,000
Staffing Needs and Associated Salary & Benefits Costs				
Transportation Services	4 FTEs			4 FTEs
	\$528,000	\$543,840	\$560,155	\$1,631,995
City Planning	2 FTEs (Temp)			2 FTEs (Temp)
	\$281,000	\$289,430	\$298,113	\$868,543
Information & Technology	2 FTEs			2 FTEs
	-	\$331,660	\$341,610	\$673,270
Fleet Services	2 FTEs			2 FTEs
	\$199,000	\$204,970	\$211,119	\$615,089
Total Proposed Operating Budget	\$1,458,000	\$2,319,900	\$2,510,997	\$6,288,897