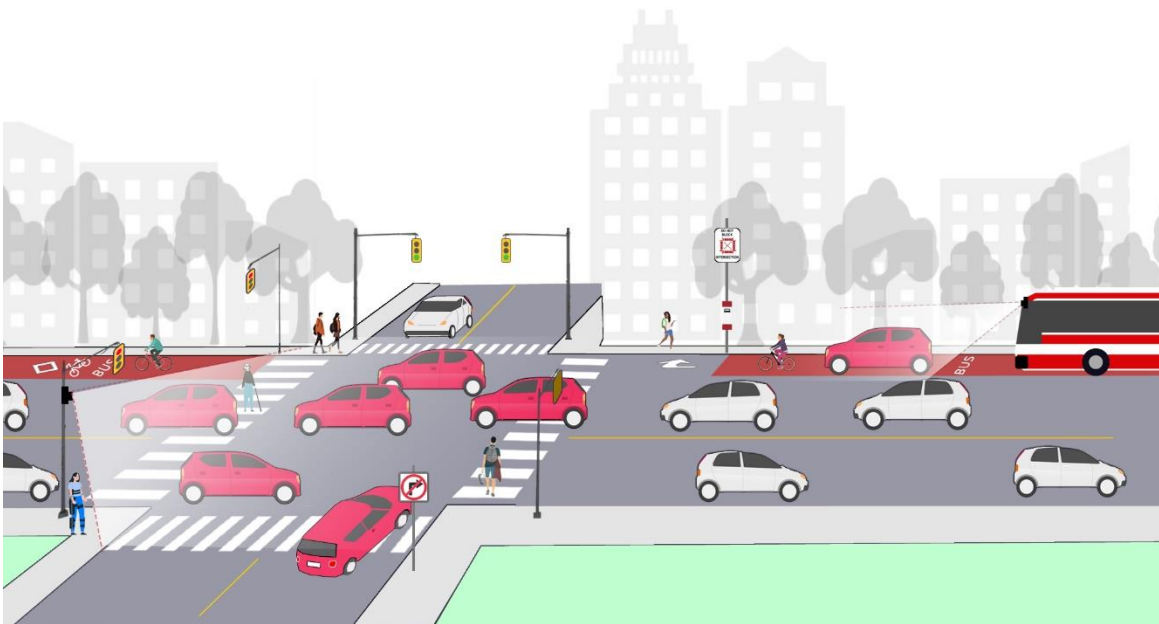# Transportation Innovation Challenge (TIC) #4:

Automated Enforcement

Call for Participation

TORONTO

Executive Summary

Visit Toronto.ca/TIC for all information.

The City of Toronto is interested in the potential for automated enforcement (AE) technology to address key urban transportation challenges. We invite applications from innovators with AE technology related to specific types of traffic violations. Qualified applicants will participate in our 4th [Transportation Innovation Challenge](#) via a time-limited technology demonstration in Toronto's rights of way.

Key application information

Call for Participation opens: Monday, November 4, 2024.

Deadline to submit applications: 11:59pm Monday, December 2, 2024.

Applications can be submitted via our [on-line form](#) or by [a form-fillable PDF](#).

If you require an alternative format to complete the application and/or if you wish to participate in the virtual information session about this Transportation Innovation Challenge, please contact TIC@toronto.ca or call 416-338-5461 as soon as possible.

Organizations eligible to apply: incorporated start-ups, incorporated established companies, principal investigators at research institutions and incorporated non-profits.

Virtual information session: Tuesday, November 19, 2024. Join at: https://toronto.webex.com/toronto/j.php?MTID=m3479a828d003204a5c9d896a49d3d409.

Last day to submit questions: Thursday, November 27, 2024.

About the Automated Enforcement TIC#4

Automated Enforcement is the fourth topic in the City's Transportation Innovation Challenge program. The City of Toronto, its agencies, boards and commissions wish to learn about the state of this technology and its ability to collect sufficient and accurate data for prosecution of three types of violations or use cases:

> Use Case 1 – Prohibited movements at intersections,
>
> Use Case 2 – Blocking of intersections also known as "blocking the box," and
>
> Use Case 3 – Illegal travel in bus priority lanes.

Participants bear all costs of their participation except for device installation and removal costs which will be covered by the City.

Participation in the TIC is subject to strict privacy and cybersecurity requirements including legislation such as the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA). Applicants should be familiar with MFIPPA and industry standard privacy and cybersecurity certifications.

The TIC program is focused on learning and not part of any procurement process nor is it a competition between Participants. Entry into the TIC is not guaranteed just by applying.

Selection of Participants will be based on evaluation by City staff to ensure a good fit for the program.

Benefits of participation

Real-world deployment: The TIC is a unique opportunity to test your hardware and train your software based on activity in the public rights-of-way within one of the largest, busiest, and most dynamic cities in North America.

Demonstrate your Technology Readiness Level (TRL): Use the TIC to ascertain your TRL and establish your eligibility for other competitions and investments.

Complementary installation and removal: The City will cover the cost of installing and removing your device(s) on existing City infrastructure and/or vehicles such as traffic signal columns, public transit vehicles; and providing a hydro (electrical) connection if necessary.

Municipal feedback: You will receive feedback from a broad range of municipal perspectives including those that improve your understanding of customer pain points and product-market fit.

Business development: TIC Participants may invite investors or clients to observe the TIC subject to the City's privacy and cybersecurity terms. There may be opportunities to invite strategic partners such as the Ontario Vehicle Innovation Network (OVIN), MaRS or other incubators or accelerators to observe the TIC. You can leverage your participation in the TIC and your deployment experience in Toronto to attract future investors and clients.

Networking: As a Participant, there will be opportunities to engage face-to-face with staff across various City Divisions and Agencies.

Raise the profile of automated enforcement: You will help shine a spotlight on new use cases of automated enforcement, spurring interest from other municipalities in the potential for this technology. Results from this TIC may be used to change provincial regulations in Ontario to expand the types of violations for which automated enforcement can be used.

Timing and stages

Stage 1: Open application period between November 4 and December 2, 2024

Stage 2: Application review between November 4 and December 31, 2024

Phase 1: Review of applications and notification of those selected to move to Phase 2

Phase 2: Discussions with Applicants and evaluation of privacy and cybersecurity measures

Stage 3: Deployment feasibility planning between January 2 and February 14, 2025

City staff and Applicants successful in both Phases of Stage 2 determine the number of devices and specific locations where device installation is feasible.

Participants must sign the Participant's Agreement.

Stage 4: Deployment of devices in the first quarter (Q1) of 2025

Stage 5: Data collection occurs between the first and third quarter (Q1-Q3) of 2025

Stage 6: TIC#4 concludes during the third quarter (Q3) of 2025

Stage 7: Feedback and reporting occur between the fourth quarter of 2025 and the first quarter of 2026

Call for Participation in Transportation Innovation Challenge (TIC) #4: Automated Enforcement

Contents

Deadline to submit applications: 11:59pm Monday, December 2, 2024

Applications can be submitted via our on-line form.

If you require an alternative format to complete the application and/or if you wish to participate in the virtual information meeting about this Transportation Innovation Challenge, please contact TIC@toronto.ca or call 416-338-5461 as soon as possible.

1. Overview

1.1. Key information

This is a Call for Participation in the City of Toronto's Transportation Innovation Challenge (TIC) on Automated Enforcement. This TIC is seeking to engage start-ups, established companies and researchers at academic institutions who have developed technology related to automated enforcement of specific types of traffic violations. Participants will engage in a time-limited deployment of a small number of their devices in Toronto's right of way. The purpose of this TIC is for the City of Toronto, its agencies, boards and commissions, to learn about the state of this technology and its ability to collect sufficient data for prosecution of these violations. This time-limited trial is conducted under the City of Toronto's Transportation Innovation Challenge Program (www.toronto.ca/TIC).

The following summary may help prospective applicants assess their level of interest in participating in the Transportation Innovation Challenge (TIC):

- The theme for the 2024 TIC is Automated Enforcement. The focus is specifically on technology that can gather evidence to enforce existing prohibitions of:
    - travel in bus lanes,
    - restricted turns and through-movements in intersections, and
    - blocking of intersections.
- TIC Participants bear all costs of their participation, except for device/hardware installation and removal costs which will be covered by the City.
- Participation in the TIC is subject to strict privacy and cybersecurity requirements including policies and legislation such as the Municipal Freedom of Information and Protection of Privacy Act, outlined in Section 5.
- The TIC program is focussed on learning; it is not part of any procurement process.

Anyone interested in applying to participate in the TIC is strongly encouraged to review this entire document and the application form at www.toronto.ca/TIC before applying. Questions can be addressed to staff via TIC@toronto.ca or call 416-338-5461.

1.2. Background on the Transportation Innovation Challenge (TIC) Program

The Transportation Innovation Challenge (TIC) Program uses time-limited, real-world deployment "challenges" to help the City learn about emerging transportation technologies that may advance the City's mobility-related goals such as Vision Zero, congestion management, improved accessibility, more efficient service delivery, and emissions reductions. When possible, it also supports local economic development. Innovators whose products relate to the identified TIC topic are invited to deploy their technology and showcase it to City staff. The specific length, format and participation requirements are customized depending on the TIC topic and specific learning objectives.

The TIC Program is not a competition between Participants, however entry into the TIC is not guaranteed just by applying. Selection of Participants will be based on evaluation by City staff to ensure a good fit for the program.

The TIC Program is not a pathway for the City or any of its Agencies, Boards or Commissions to procure any of the demonstrated products. Similarly, topics selected for a particular TIC are not indicative of any pending procurements.

More information about the TIC program and past innovation challenges can be found on the program website: www.toronto.ca/TIC.

1.3. Background on automated enforcement

Violations of traffic regulations lead to numerous negative consequences that directly impact Toronto residents, businesses and visitors. They put road users, especially pedestrians and cyclists, at risk of injury or death, delay surface transit movement and exacerbate congestion, among other impacts. While traditional enforcement will always play a role in promoting compliance with the rules of the road, there are many factors that limit its reach and effectiveness. Traditional enforcement is very resource intensive, requires space for vehicles to pull over (further impacting safety and traffic flow) and creates opportunities for negative interactions between law enforcement officers and the individual who committed the traffic violation.

The City of Toronto has operated a Red-Light Camera program for more than 20 years and an automated speed enforcement program for approximately 4 years, both of which have been successful in improving road safety. Based on this success, on-going technological advancements and the City's continued emphasis on road safety, transit prioritization and congestion management, the City wishes to explore the current state of technology for additional automated enforcement use cases.

1.4. Automated enforcement use cases in this TIC

The primary focus of this TIC relates to the following three (3) automated enforcement use cases:

- **Enforcement of prohibited movements at intersections.** This could include turn movement or through-movement prohibitions that have been implemented for the purposes of transit prioritization (e.g. King Street in downtown Toronto), protection of vulnerable road users (e.g. Bloor Street at Lansdowne Avenue), congestion management (e.g. Yonge Street at St. Clair Avenue) or to deter traffic infiltration (e.g. Eglinton Avenue at Gardiner Road). The scope of this TIC includes straight-through, left, right and U turn prohibitions that apply either at all times or at specific times of day.

- **Enforcement of vehicles illegally travelling in a painted bus priority lane**. This applies to sections of bus lanes where general traffic is prohibited (e.g. parts of Kingston Road that are not within 45m of a driveway or intersection). Both fixed location camera systems and vehicle mounted systems may be considered for this TIC.

- **Enforcement of vehicles illegally blocking an intersection (blocking the box).** This applies to vehicles that enter an intersection on a green or amber traffic signal when there is insufficient space for the vehicle to fully clear the intersection whether vehicles are making straight-through movements or turning. This is a frequent issue at many downtown arterial intersections during peak periods.

The City, at its sole discretion, may choose to explore other potential use cases for automated enforcement technology that are directly connected to congestion management, safety or transit prioritization (e.g. stop sign enforcement, distracted driving enforcement, wrong way driving on one-way streets). Prospective applicants wanting to demonstrate an automated enforcement application that is not one of the three primary use cases listed above are encouraged to contact the City prior to applying.

The current provincial regulatory environment does not permit automated enforcement to be used for any of these three use-cases. Provincial legislative and / or regulatory changes would be required if the City were to pursue the implementation of an automated enforcement program for any of these violations. At this time the City wishes to test the feasibility of doing so.

During the TIC, no vehicle owners will be identified, no warnings or tickets will be issued. Ticket processing and adjudication systems are likewise outside the scope of the TIC.

Each Participant in this TIC will provide one or more devices for deployment in the public right-of-way for a period of up to several months. Devices are expected to capture data in the same manner that they would for a deployment where tickets were issued.

Recognizing that automated enforcement technology may collect, transmit and analyze images containing personal information, Applicants may be required to undergo a Privacy Impact Assessment and cybersecurity testing to ensure that the City is compliant with the Municipal Freedom of Information and Protection of Personal Privacy Act (MFIPPA) and other protections prior to accepting the Applicant as a Participant.

2. Benefits of participation

Benefits of participating in the TIC include the following:

- **Real-world testing and deployment:** The TIC is a unique opportunity to test your hardware and train your software based on activity in the public right-of-way within one of the largest, busiest, and most dynamic cities in North America. An appropriate location for deployment will be determined in collaboration with City staff based on observed traffic patterns, violation prevalence, feasibility and Participant's preferences.

- **Demonstrate your Technology Readiness Level (TRL):** Use the TIC to ascertain your TRL and establish your eligibility for other competitions and investments.

- **Complementary installation and removal:** The City will cover the cost of installing and removing your device(s) on existing City infrastructure such as traffic signal columns and providing a hydro (electrical) connection if necessary.

- **Comprehensive feedback:** You will receive feedback from a broad range of municipal perspectives including those that improve your understanding of customer pain points and product-market fit.

- **Business development:** TIC Participants are welcome to invite prospective or existing investors or clients to observe the TIC subject to the City's privacy and cybersecurity terms. For companies that have, or are interested in having, a presence in Toronto or elsewhere in Ontario, there may be opportunities to invite strategic partners such as the Ontario Vehicle Innovation Network (OVIN), MaRS or other incubators or accelerators to observe the TIC. You will also be able to leverage your participation in the TIC and your deployment experience in Toronto to attract future investors and clients.

- **Networking:** As a Participant in the TIC, you will have the opportunity to engage face-to-face with City and City Agency staff across various Divisions.

- **Raising the profile of automated enforcement:** Through this TIC, you will help shine a spotlight on new use cases of automated enforcement, spurring interest

from other municipalities in the potential for this technology. Results from this TIC may be used to change provincial regulations in Ontario to expand the types of violations for which automated enforcement can be used.

Applicants should be aware that participation in the TIC is not a pathway to procurement with the City, TTC (Toronto Transit Commission), or any other City Agency, and their performance in this TIC will not factor into any potential future procurement activities.

3. What to expect

3.1. Timing

An overview of the stages and anticipated timelines for this TIC are presented below.

There are seven (7) stages with associated timelines anticipated for this TIC as outlined below.

Stage 1: Open application period between November 4 and December 2, 2024

Prospective Participants notify the City of their interest (notification is optional), review the Call for Participation document in detail, ask questions, complete and submit their application form and pay the application fee.

Stage 2: Application review between November 4 and December 31, 2024

Application review consists of two phases.

Phase 1: City staff review applications and notify Applicants whether they have been selected to move to Phase 2.

Phase 2: Applicants engage in discussions and evaluation focused on their privacy and cybersecurity measures and may contribute to a Privacy Impact Assessment and/or undergo cybersecurity testing.

Stage 3: Deployment feasibility planning between January 2 and February 14, 2025

City staff and Applicants successful in both Phases of Stage 2 determine the number of devices and specific locations where device installation is feasible. To confirm their engagement, Participants must sign the Participant's Agreement.

Stage 4: Deployment of devices launches the TIC demonstration in the first quarter (Q1) of 2025

Devices are installed by City contractors, activated, and tested to ensure proper functioning.

Stage 5: Data collection occurs between the first and third quarter (Q1-Q3) of 2025

Data from Participant's devices are collected and analyzed. Participants engage with Challenge Advisors to explain their products.

Stage 6: TIC demonstration concludes during the third quarter (Q3) of 2025

Devices are removed, their condition is observed (e.g. weathering, vandalism, etc.) and they are returned to Participants.

Stage 7: Reporting and debrief occurs between the fourth quarter of 2025 and the first quarter of 2026

Data are analyzed and a final report is prepared which summarizes learnings about the state of the technology and its applicability to the selected use cases, without reference to the quality of performance by any specific Participant. Participants review the report prior to release. A final debrief session is held with each Participant.

3.2. Roles and responsibilities

The roles and responsibilities for both TIC Participants and the City are outlined below. Participation in the TIC is voluntary and Participants may choose to withdraw at any time.

Participant roles and responsibilities

- Complete a detailed review of both this Call for Participation and the Application Form *before* beginning an application

- Determine eligibility and if you meet all minimum requirements

- Submit a completed application via the on-line form between November 4 and December 2, 2024 or via an alternative format if requested in advance

- Pay a non-refundable application fee of $480.48 (includes HST) by certified cheque made out to the City of Toronto Transportation Services Division and send to:

  c/o Jennifer Niece, Manager, Strategic Policy & Initiatives, Transportation Services

  100 Queen St. West, East Tower, 22nd floor,

  Toronto, ON M5H 2N2

  Please write "Cost Centre: TS2010 and FAC: 2710400000" in the Memo section of the cheque.

- When asked, provide information to contribute to the City's Privacy Impact Assessment and any cybersecurity testing deemed necessary

- Participate in the deployment planning process including submitting device designs/drawings and written installation guidance

- Sign the Participant's Agreement

- Provide one or more devices capable of collecting data for one or more of the automated enforcement use cases noted in Section 1.4

- Be available to meet at City location(s) to guide installation of your device(s) by City contractors and assist with commissioning/validation

- Establish your device's internet/data connectivity and monitor for the duration of the deployment period

- Provide the data generated by your device(s) to City staff

- Engage with Challenge Advisors to describe the capabilities of your technology and learn about their concerns and requirements for successful AE deployment in Toronto

- Retrieve the device(s) once they have been removed by City contractors, or pay for shipping to have them returned to you

- Engage in a feedback/debrief session with City staff

- Provide comments on a draft report prepared by City staff

City roles and responsibilities

- Review applications, and engage with qualified Applicants to collect information required for the Phase 2 assessments of privacy and cyber security

- Conduct testing, if necessary, to verify the participant's privacy and cybersecurity measures

- Select Participants who have satisfied all City requirements

- Prepare a deployment plan in collaboration with each Participant, recognizing the use-cases each Participant believes are the most relevant to their device's capabilities

- Arrange for and cover the costs of the installation of devices in the public right-of-way or on one or more TTC (Toronto Transit Commission) vehicles. A maximum number of devices per Participant and/or per use case may be determined depending on the number of qualified Participants

- Introduce Participants and Challenge Advisors and organize opportunities for presentation and discussion

- Collect, validate and analyze data from each device and Participant with support from a third-party partner

- Provide feedback to Participants in a debrief session

- Remove devices and return to Participants following the deployment period
- Develop a public report and consider any input from Participants on the draft report

3.3. Application review

The City seeks applications from entities such as start-ups, established companies, non-profits and researchers at academic institutions. Applications will be assessed on merit and not other factors such as length of business or previous relationships with the City.

City staff will review applications on a rolling basis, including all submitted before the deadline of 11:59pm Eastern Time on December 2, 2024.

Applications that do not meet the minimum requirements in Section A will not be further evaluated and those Applicants will be notified.

Applications that meet the minimum requirements will be fully reviewed and Sections B, C and D will be assessed on the criteria of:

- clarity and completeness of responses,
- extent to which the applicant's technology satisfies one or more of the City's use cases,
- feasibility of the applicant's technology to be deployed in the City's right of way, and
- satisfaction of the City's privacy and cybersecurity requirements.

Applications that pass both the minimum requirements and all of Sections B, C and D will be invited to Stage 1, Phase 2 Application review for further evaluation of privacy and cybersecurity measures.

- City staff will determine the information or assessments required to verify privacy and cybersecurity measures (see Sections 5.3 and 5.4). Any testing would be conducted by the City directly or by a third party retained by the City at the City's expense. In the event that a necessary test cannot be completed or the test reveals privacy or cybersecurity concerns that cannot be promptly resolved by the Applicant, the City may reject the application.
- Following successful verification of privacy and cybersecurity measures, Applicants will move to the Deployment feasibility planning stage.

3.4. Deployment feasibility planning

During or after Phase 2, privacy and cybersecurity screening has been completed to the City's satisfaction, City staff will work collaboratively with each qualified Applicant to develop a tailored deployment plan that meets both the City's and the Applicant's objectives for the TIC. Participation in the TIC is not confirmed until the City and the

qualified Applicant complete a mutually agreeable deployment plan and sign the Participant's Agreement.

Topics to be addressed in the deployment feasibility planning stage include but may not be limited to:

- Deployment context and proposed location(s) where each device could be deployed (see Section 3.5).

- Number of devices to be installed. The minimum number of devices is 1 and the maximum number of devices will be determined by the City and the Applicant, based on the number of qualified applicants and the number of different use cases for which a particular Applicant wishes to demonstrate their technology.

- Device specifications such as dimensions and weight, ideal mounting infrastructure and positions. Applicants will be asked to provide technical designs/drawings for their devices to aid in feasibility assessment of locations and installation.

- Tentative installation date and deployment duration (anticipated to be 4-6 months).

- Approach for sharing data with City staff.

- How City staff can access, engage with, collect and analyze device data. The City may enlist the support of a third party to perform some or all of its data functions.

- Applicant's plans for initial testing, monitoring, calibrating and repairing throughout deployment.

- Opportunities to enhance mutual learning outcomes, including any learning objectives identified by the Applicant.

- Opportunities for the Applicant to invite investors, prospective clients or other guests to a site meeting with the Challenge Advisor subject to the City's privacy and cybersecurity terms.

Applicants can ask City staff questions throughout the deployment feasibility planning process and any concerns will be addressed in a collaborative manner to the greatest extent possible.

3.5. Location

Deployment will occur in the City's right-of-way to ensure appropriate locations to effectively test technology for the use cases outlined in Section 1.4.

Deployment locations will be determined during the deployment feasibility planning process in collaboration with each Challenge Participant and influenced by:

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- Capacity and location of supporting infrastructure, pole ownership, availability of hydro (electrical) connections and available space within the right-of-way,

- The number of potential Participants, devices and shared location preferences,

- The feasibility and costs of installation,

- For bus priority lane enforcement, the ability to arrange and install devices on TTC vehicles or on infrastructure adjacent to the City's dedicated transit routes,

- The City's preferred deployment locations for enforcement of prohibited movements along the King Street Transit Priority corridor and other locations, and

- The City's preferred deployment locations for block the box enforcement at one or more downtown arterial intersections where blocking is frequently observed.

3.6. Challenge Advisors

To provide a comprehensive, multi-disciplinary learning experience, the City will assemble a panel of Challenge Advisors representing the following Units, Divisions and Agencies.

Units within the Transportation Services Division

- Strategic Policy and Initiatives

- Traffic Operations

- Data and Analytics

- Automated Enforcement

- Traffic Systems Planning, Design and Capital Coordination

- Vision Zero

Other City Divisions

- Technology Services

- Office of the Chief Information Security Officer

- Corporate Information Management Services (City Clerk)

- Economic Development and Culture

- Legal Services

City Agencies

- Toronto Transit Commission (TTC)

- Toronto Police

- Exhibition Place

External agencies could also be engaged and their participation confirmed during the deployment feasibility planning stage. Likewise, an academic partner could support the data collection and analyses in this TIC.

3.7. Learning and reporting

This TIC is an opportunity for the City to learn about the current state of automated enforcement technology and for Participants to learn and receive feedback from a range of municipal perspectives about how their technology performs in a real-world context. With this focus, and the TIC's separation from procurement, the City welcomes applications that include either pre-market or established technologies.

The learning and reporting approach of the TIC is outlined below and identifies what are and are *not* included.

The TIC learning and reporting approach

- Appreciating that automated enforcement technology continues to advance, and that this TIC can only reflect the status of various technologies at one moment in time.

- Collecting and analyzing data to understand how different technologies perform in different contexts (potentially involving an academic partner).

- Providing Participants with detailed feedback and working collaboratively to optimize the performance of their technology.

- Reporting on the TIC's learning objectives (see Section 6), including suitability of different technologies for different use cases, the range of quality of performance, and the number of violations captured by the devices, without referring to individual Participants. The report is expected to follow a similar format and have a similar tone and level of detail as the report from TIC #3, which is available at www.toronto.ca/TIC. Any identified limitations will be framed as areas for future development, or trade-offs that may be contextually appropriate.
    - o Participants will have the opportunity to review a draft version of this report, provide feedback and discuss any issues with City staff before the report is finalized. City staff will make a reasonable effort to incorporate feedback provided by Participants

- Sharing high-level findings with the public.

- Applying the findings to inform the City's future needs and priorities without impacting any Participant's engagement or performance in future procurements.

- Enabling Participants to provide the City feedback on the TIC program and how it could be improved.

NOT part of the TIC approach

- Ranking, scoring or directly comparing the performance of individual participants.
- Using any data or conclusions (or any other bias) about individual Participants in any future procurement process by the City or its Agencies, Boards or Commissions.

3.8. Confidentiality

City staff understand and appreciate the proprietary nature of automated enforcement technology and the TIC program has been designed with this in mind. Participants are discouraged from sharing any confidential or proprietary information with City staff. However, if confidential information and intellectual property (IP) will be shared by Participants, Participants must identify and label such information for the City. City staff will engage with Participants individually; Participants will not have any direct interaction with each other through the TIC process (except potentially during the information session within the Call for Participation period).

Participants should be aware that any information that is shared with the City may be subject to the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA). Participants are encouraged to proactively discuss any concerns regarding confidentiality and IP with City staff during the application and/or the deployment feasibility planning stages.

4. Who should apply

4.1. Eligible organizations

Participation in the TIC is open to any incorporated entity that has developed or is licensed to distribute, automated enforcement technology. This includes:

- incorporated companies,
- incorporated non-profit organizations,
- researchers at academic institutions, and
- partnership entities consisting of at least one corporation as the lead.

4.2. Eligible technologies

The TIC is open to all technological solutions that achieve the goals of enabling automated enforcement while protecting privacy and mitigating cybersecurity risks. Any technology or combination of technologies (various types of cameras and sensors and various software and AI approaches) can be used for the TIC. The device(s) may be mounted in a variety of ways e.g., pole-mounted, bus-mounted or other feasible ways. The technology (device, platform to access data, etc.) should be ready for deployment at the time of application so that City staff can verify its deployment feasibility prior to confirming an offer to participate.

More specific requirements are outlined in Section 5.

5. Participation requirements

All Applicants must satisfy the requirements outlined below to be considered for participation in the TIC. The Applicant shall ensure that any subcontractors, partners, agents, or affiliates of the Applicant will comply with the requirements below. The City reserves the right to deny or terminate the participation of any Applicant / Participant who is deemed, at the City's discretion, to not satisfy the requirements set out in this Call for Participation.

5.1. Minimum requirements

Several requirements are mandatory to participate in this Automated Enforcement TIC. Applicants must confirm in their application that they do or will meet the minimum requirements before January 1, 2025. Minimum requirements include that Applicants:

1. Are an incorporated entity or a Principal Investigator at a recognized university or college or a partnership entity consisting of at least one corporation as the lead.

2. Can or will be able to comply with the insurance requirements of not less than $2 million Technology Errors and Omissions Liability insurance and between $2 million and $5 million Cyber Liability insurance,

3. Are authorized to sign a Participant's Agreement with the City establishing the parameters of their participation,

4. Are open to their technologies undergoing a privacy impact assessment and cybersecurity testing such as vulnerability and penetration testing in an isolated environment prior to deployment,

5. Agree to share with the City any types of data collected by their technology,

6. Will be able to deploy their technologies and devices for the entire duration of the TIC (4-6 months),

7. Will have a staff person / representative available to be on site to guide City contractors on the correct installation and removal of their device(s) at the start and end of the TIC as well as if repairs or maintenance are required during its deployment,

8. Are aware that participation in the TIC is not a pathway to procurement with the City, and

9. Are familiar with the Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990, c. M.56 (MFIPPA), agree that the data collected by their devices during this TIC will be subject to this Act, and agree to comply with the provisions in this Act.

5.2. Technical requirements

The following technical requirements must be met to participate in the TIC:

- The device cannot present a public safety hazard in any way.

- The technology must be capable of collecting data to enable automated enforcement for at least one of the use cases outlined in Section 1.4. An applicant is only required to pay one application fee regardless of how many use cases they wish to deploy for or how many devices are agreed to for deployment.

- The technology must be capable of:
  - identifying when a violation has occurred,
  - capturing the licence plate of the violating vehicle, and
  - documenting admissible evidence of the violation.

Ideally the device will function in all typical weather and lighting conditions (rain, snow, darkness, low light, stormy conditions), but the City is open to engaging with Applicants whose products may still need improvement in such adverse conditions.

While the TIC is open to all technological solutions, applicants should consider the learning objectives outlined in Section 0 before applying.

- The device must be feasible to install. The City may not be able to accommodate all required setbacks, mounting heights, etc. at all locations. Installation on existing City infrastructure is required as the installation of new infrastructure such as poles is not within the scope of this TIC and the City does not have authority to mount on adjacent buildings.

- While manual processing of the information generated by the automated enforcement system is permissible, City staff must be granted access to the raw output data from the automated system (in addition to any post-processing data). This requirement may not apply to an initial calibration and validation period of up to 1 month.

5.3. Privacy requirements

"Personal Information" is defined in the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA) as "recorded information about an identifiable individual." It includes licence plate information (even if it is not connected to a vehicle owner's name, address, etc.) as well as any photos or videos that include human faces. The collection and management of personal information is therefore an inherent component of participation in the TIC.

Participants shall only collect, use, disclose, retain and dispose of personal information in accordance with MFIPPA, City policy, and exclusively for the purposes of participating in the TIC unless otherwise authorized by the City. It is important that

Participants understand that the collection of personal information on behalf of the City must be limited to what is necessary for the proper administration of a lawfully authorized activity, in this case the execution of the TIC. Applicants are encouraged to familiarize themselves with the collection of personal information provisions in MFIPPA. The City will retain ownership of all data collected from technologies deployed in the TIC, regardless of where the data are stored, until all data are destroyed, per the City's records retention policy.

The City will be completing a Privacy Impact Assessment (PIA) of each Applicant's technology as part of Phase 2 Application review, and prior to the Deployment feasibility planning stage. A PIA is an in-depth analysis tool the City Clerk's Office uses primarily with technology projects to identify and resolve any privacy risks in the design of a technology, system, program, or service. Participants will be required to provide detailed information about how their technology collects, manages and protects personal information to allow City staff to complete the PIA. Measures to reduce the collection of personal information such as edge computing (i.e. the processing of data at the physical location where it is collected) and automatic facial blurring are encouraged, though not required, for participation in this TIC.

Applicants will be advised of the PIA process after they have passed the minimum requirements and Phase 1 of the Application review. A final determination regarding privacy requirements will be made by staff in the City Clerk's Office, based on discussion with the Applicant.

5.4. Cybersecurity requirements

The City has strict cybersecurity requirements that must be met to participate in the TIC and like the PIA, will be addressed in more detail as part of the City's Phase 2 Application review, and prior to the Deployment feasibility planning stage. Applicants will be required to demonstrate an appropriate level of cyber sophistication.

Examples of cybersecurity requirements that Participants should expect to address include and are not limited to, the following:

- All personal or confidential information must be encrypted, both in flight and at rest, using a strong cryptographic protocol that is consistent with the City's encryption policy and cybersecurity industry standards as updated from time to time, such as FIPS 140-2, FIPS 140-3, ISO27001 or NIST SP 800-175B. Under no circumstances shall data be encrypted using a standard weaker than 256-bit.

- Processes must align with industry best practices to detect, prevent, and recover from a cyber-attack, integrate vulnerability management and patching, and ensure regular updates of antivirus, antimalware, and antispyware software.

- Data should not be removed from Canada. However, data may be accessed but not stored outside Canada with the understanding that temporary caching of such data may be necessary to perform ad hoc customer support services on a

case-by-case basis. Applicants may contact the City to discuss whether alternate data residency provisions can be accommodated.

- Data centres used to provide such services should meet the following or more stringent sustainability requirements of:
  - SSAE No. 18 SOC 2 Type II

- Where applicable, Applicants and Participants shall ensure to include multi-factor authentication in accordance with current cybersecurity industry best practices.

- Applicants and Participants will not connect to any City networks for this TIC.

- Applicants must be willing to allow the City, or any organization retained by the City, to undertake tests or assessments that City staff deem necessary to verify the protection of personal information. These tests and assessments may include but not be limited to:
  - Cloud assessment
  - Security Reference Architecture (SRA) assessment
  - Identity Access Management (IAM) assessment
  - Penetration testing
  - Threat Risk Assessment (TRA)

- The device must be tamper-resistant and weather resistant.

6. Preliminary learning objectives

This TIC has been designed to generate insights in relation to the following learning objectives. These learning objectives will be used to guide discussions during the TIC and will be incorporated into the final report.

- Privacy and cybersecurity objectives
  - Privacy protection measures
  - Cybersecurity optimization measures

- Technology/system capability objectives
  - Evidence production (how the technology documents the violation)
  - Capture rate (the proportion of actual violations that the technology correctly identifies; both false positives and false negatives will be considered)
  - Configurability (how flexible the technology is to be deployed in different regulatory, geometric, temporal or behavioural contexts)

- o Breadth (e.g. the ability to capture multiple lanes or multiple violations with a single device)

- o Situational awareness (the ability of the system to detect relevant and/or atypical circumstances such as emergency vehicles, snow clearing operations or road work that may result in valid exemptions from a regulation)

- o Functionality (e.g. the ease of retrieving or reviewing data)

- o Data interoperability (e.g. the potential for data to be integrated into another platform)

- o Potential to provide multiple functions (e.g. counting)

- Device objectives

  - o Portability and ease of installation

  - o Optimal device positioning (e.g. height, lateral positioning, distance from an intersection, etc.)

- Vandalism resistance

- Other City objectives

  - o Location suitability and equity (e.g. factors to consider with respect to income, demographics, road safety impacts, risk exposure, etc.)

  - o Financial - Pricing structure (The TIC will document how the product or service is offered, such as through subscription, purchase, etc., but will *not* explore specific costs, nor evaluate applications based on any costs)

The above list may evolve or expand over the course of the TIC as new areas of insights emerge.

7. Related initiatives being undertaken by City agencies

While this TIC is focussed specifically on the three use cases listed in Section 1.4, it is being undertaken in conjunction with two parallel initiatives led by City agencies.

The Toronto Police Service (TPS) issued a Request for Information (RFI) in March 2024 to understand innovations in the field of Traffic and Parking Enforcement and Automated License Plate Recognition (ALPR) technology for enforcing parking and stopping violations e.g., stopping in a bike lane or stopping on arterial streets during peak period when stopping is prohibited or exceeding the maximum parking period, among many others.

The Toronto Transit Commission (TTC) is piloting automated enforcement technology for vehicles that illegally pass open streetcar doors. This initiative is currently the procurement stage.

While these related initiatives may include procurement, this TIC is not a procurement process. Applicants and vendors/suppliers are free to engage in any or all of these three initiatives; participation in one has no impact on the others. Staff at the City, TPS and TTC will ensure that the procurement processes unfold independently and that there is no conflict arising during bid evaluation.

8. How to apply

Applications for this TIC are due by **11:59pm Eastern Time, Monday, December 2, 2024**. Late applications will not be accepted.

If you would like an alternative format and/or if you would like to participate in a virtual information meeting, please notify us as soon as possible at TIC@toronto.ca.

Questions relating to the TIC or the application process must be sent to the TIC email address: TIC@toronto.ca at any time prior to 11:59 pm Eastern Time on Thursday, November 27, 2024.

Prospective applicants are encouraged to notify the City of their interest during the application period at TIC@toronto.ca. The purpose of this notification is for City staff to be able to advise interested parties of any updates or provide clarifications if needed. Such notification is non-binding; it will not obligate anyone to submit an application, pay the application fee or participate in the TIC.

A **virtual information session will be held on November 19, 2024,** where City staff will provide an overview of the TIC and be available to respond to questions. The meeting link will be shared with prospective Applicants who notified the City of their interest. Notifying the City and participating in this meeting is encouraged, though not required.

8.1. Application checklist

- Review the Open Call for Participation in its entirety (this document) and the application form. The application form is available in a form-fillable [PDF format](#) but submission is requested to be via the [on-line form](#).

- Notify the City of your interest in applying (optional).

- If you would like an alternative format and if you would like to participate in a virtual information meeting, please notify us at TIC@toronto.ca or call 416-338-5461.

- Participate in the virtual information session (optional).

- Submit any questions to TIC@toronto.ca (optional) *before* November 27, 2024.

- Submit the [application form](#)

- Send application fee of $480.48 CAD via certified cheque:

    Payable to: City of Toronto Transportation Services Division

    c/o Jennifer Niece, Manager, Strategic Policy & Initiatives, Transportation Services

    100 Queen Street West, 22nd Floor, East Tower

    Toronto, ON M5H 2N1

    Please write "Cost Centre: TS2010 and FAC: 2710400000" in the Memo section of the cheque.

City Authorizations

This TIC activity is authorized by the following Council decisions:

[Congestion Management Plan 2023-2026 - Fall Update (toronto.ca)](toronto.ca)

City Council, at its meeting on October 9, 2024, adopted the Congestion Management Plan (2023-2026) with amendments and authorized the General Manager, Transportation Services to:

a) enter into agreements with third party entities to participate in Transportation Innovation Challenges including Challenges that explore the potential for new automated enforcement technologies to improve road safety, transit prioritization and congestion across the City, and

b) to deploy camera devices on a temporary basis for the purpose of automated capturing of images of traffic violations, including personal information, for which cameras would be deployed at fixed locations within the City right-of-way and / or on Toronto Transit Commission buses.

Such agreements and the collection of personal information will be subject to the Municipal Freedom of Information and Protection of Privacy Act and shall be based upon terms and conditions that address concerns around privacy, cybersecurity, information management and other operational considerations.

City Council, at its meeting on March 20, 2024, adopted the Congestion Management Plan (2023-2026) Update with amendments and authorized the implementation of Transportation Innovation Challenges (TICs) outside of Exhibition Place when warranted. https://www.toronto.ca/legdocs/mmis/2024/ie/bgrd/backgroundfile-243081.pdf

City Council, at its meeting on May 5, 2021, authorized the implementation of the Transportation Innovation Challenge program to explore new and emerging transportation technologies at the Transportation Innovation Zone at Exhibition Place. https://www.toronto.ca/legdocs/mmis/2021/ie/bgrd/backgroundfile-165845.pdf