

Committee of the Whole (2) Report

DATE: Tuesday, June 6, 2023 **WARD(S):** ALL

TITLE: VAUGHAN TRANSPORTATION INNOVATION PROGRAM

FROM:

Nick Spensieri, City Manager

Vince Musacchio, Deputy City Manager, Infrastructure Development

ACTION: DECISION

Purpose

This report proposes the launch of a new Vaughan Transportation Innovation Program (TIP), including the program framework, partners, and next steps.

Report Highlights

- As Vaughan continues to grow, the City will need to draw on new modes of travel or services to seize opportunities to enhance the movement of people and goods.
- Innovative transportation technologies are undergoing a rapid transformation. The Vaughan Transportation Plan identifies a need to proactively test next-generation transportation solutions to evaluate them for effectiveness, safety, accessibility and privacy, before widespread daily use.
- The Transportation Innovation Program (TIP) positions the city as a testbed for smart mobility innovations. It establishes a responsible, streamlined, and fair process to partner with companies who wish to test innovative solutions.
- The TIP will launch with a “challenged-based” approach to address the city’s needs using existing resources. If external funding is secured, staff have proposed an “open-call” stream to allow more testing opportunities.
- The TIP will leverage Vaughan’s innovation ecosystem partners for program delivery and position Vaughan as a centre of excellence for the development and adoption of next-generation people and goods movements solutions.

Recommendations

1. THAT Council endorse the launch of the Transportation Innovation Program and any successor programs and permits the use of city space and infrastructure as test sites to demonstrate new technologies, in accordance with the goals of the Vaughan Transportation Plan;
2. THAT Council authorizes the City Manager or City Clerk to enter into and execute all necessary or ancillary agreements with applicants, program partners, grant funding partners, stakeholders or any other potential third-party partners with respect to the launch and operation of the Transportation Innovation Program;
3. THAT all agreements are in a form satisfactory to the Deputy City Manager of Administrative Services and City Solicitor, or designate, the Deputy City Manager, Infrastructure Development, or designate, and the Director, Economic Development, or designate; and,
4. THAT Council direct staff to enact all necessary refinements, minor modifications, technical amendments to City policies and procedures, or by-law amendments to allow or facilitate testing within the Transportation Innovation Program.

Background

Vaughan is a rapidly growing, and urbanizing city. Enhanced goods and people movement will continue to be an opportunity to provide better service.

By 2051, Vaughan's population is projected to increase to over 570,000, and over 350,000 people will be employed in the City. The 2022 Citizen Engagement Survey revealed 39% of residents identified traffic and traffic-related issues are the most important issue facing the community. As Vaughan continues to grow, the City will need to draw on new opportunities to address the congestion challenges that we face.

Innovative transportation technologies are undergoing a rapid transformation from the arrival of automated, connected, electric and shared vehicles, and smartphone apps are changing the way travelers think about and use roadways, transit and other transportation services. As this grows, City staff need a process and framework to proactively test new modes of travel or services in order to evaluate them for effectiveness, safety, accessibility and privacy prior to wider use.

Transportation Innovation Program (TIP) is a key action from the Council-approved 2023 Vaughan Transportation Plan which provides steps towards improving Vaughan's road/street network, advocating for improved public transit and improving active and emerging modes of transportation.

The Transportation Innovation Program positions the city as a testbed for smart mobility innovations.

The TIP is a transparent, streamlined, and fair process established to partner with companies who wish to test their innovative and/or emerging transportation technologies that align with the City's transportation and mobility objectives, helps achieve the vision and goals of the Vaughan Transportation Plan and advances the MoveSmart Mobility Management Strategy.

The program will offer companies access to city space and infrastructure to demonstrate their innovative solution in a controlled, real-world environment. It will be a key hub of commercial activities, especially for academic researchers, start-ups and Small and Medium Enterprises (SME) that may not otherwise have the resources to demonstrate or promote their solutions to potential customers and partners. All demonstration projects will be conducted in a controlled, operational environment and in accordance with applicable laws, regulations and approvals.

To effectively implement or regulate emerging transportation technologies and approaches, it is important to demonstrate these solutions within an operational environment. This allows staff to gain a comprehensive understanding and knowledge of their potential benefits and impacts, enabling informed decision-making and future policy development.

Numerous exciting pilots have been initiated in Vaughan. For example, in 2022, the City partnered with York Region Transit (YRT) and Metrolinx to bring Vaughan commuters the Mobility On-Request Maple-Rutherford GO Pilot Project. Piloting this project provided a unique opportunity for citizens to test new ways to get to the GO train without having to drive and look for a parking spot, and for staff to test the potential demand for this type of transit service.

Given the rapid evolution of technology, there is a wide array of innovations that could be explored and tested through the Transportation Innovation Program. Some examples include shared mobility solutions, the integration of smart signals and connected infrastructure, automated vehicles for passenger or delivery purposes, advancements in pavement materials or construction methods, the expansion of electric vehicle charging infrastructure, as well as the implementation of dynamic signage and wayfinding systems.

The TIP will be led by the Economic Development and Infrastructure Planning and Corporate Asset Management (IPCAM), in close collaboration with internal departments and external agencies throughout its implementation.

Vaughan is at the heart of York Region's economy and innovation is a key emerging cluster in Vaughan's economy.

York Region is Canada's second-largest tech hub, with four (4) tech companies per 1,000 residents and has the highest concentration of tech workforce in the Toronto-Waterloo corridor. Vaughan is at the heart of York Region's innovation economy, linking the Cortelluci Vaughan Hospital to Canada's top universities and Toronto's renowned research hospitals.

The Information & Communications Technology (ICT) sector in Vaughan is more than 1,200 companies strong and employs more than 6,400 people. Vaughan ranks ahead of major international cities, including London, Oslo and Riyadh for new patents filed. There is a significant opportunity to grow Vaughan's economy and to create jobs by enhancing programming and resources available to emerging companies in the tech and innovation sector.

By developing a new smart mobility testbed program, the City will help its emerging innovation cluster grow and expand its role as a leader in innovation. The City can leverage its prime location along the innovation corridor connected by the subway from the Vaughan Metropolitan Centre (VMC), York University, University of Toronto, MaRS Discovery District, the University Health Network, and Toronto Metropolitan University.

Innovation is a key emerging opportunity in Vaughan's economy. Growth in the technology sector has a significant multiplier effect on the broader economy.

Studies of the multiplier effects in the United States reveal that for each new high-tech job in a city, an additional five local jobs are generated outside of the high-tech sector. These jobs span across skilled occupations, such as professional services and healthcare, as well as unskilled occupations, including retail and food services. Investments in the innovation economy not only ensure the long-term competitiveness of the local tech sector but also drive significant economic growth throughout the entire economy.

As Vaughan continues to transition from a suburban to an urban centre, it is important that the Economic Development department continue to build local capacity to support emerging sectors. There is an opportunity for Economic Development to work with Infrastructure Planning and Corporate Asset Management to attract economic activities by providing a test site for businesses in high-growth industries in technology, hardware and software and services.

An innovation testing program in Vaughan contributes to the city's economic growth, job creation, and enhanced economic diversification by fostering collaboration among the city, industry, researchers, and entrepreneurs. This program acts as a catalyst for transforming ambitious ideas into tangible realities and attracts investments in the local economy, making Vaughan an appealing environment for businesses to flourish.

Previous Reports/Authority

[2023 VAUGHAN TRANSPORTATION PLAN, COMMITTEE OF THE WHOLE \(WORKING SESSION\), WEDNESDAY, MAY 3, 2023.](#)

[SUPPORTING VAUGHAN'S INNOVATORS – UPDATE AND NEXT STEPS, COMMITTEE OF THE WHOLE \(2\), TUESDAY, FEBRUARY 8, 2022.](#)

Analysis and Options

Canadian cities are increasingly embracing municipal innovation programs that feature real-world test sites.

These programs serve as platforms for cities to gain insights into emerging technologies before establishing regulations, developing guidelines for implementation, and shaping technology development. By creating testing programs, cities can actively learn and adapt to new advancements, ensuring they align with the unique needs and goals of their communities.

Innovation programs come in various models, showcasing different approaches to testing and experimentation. These models encompass a wide range of approaches, including purpose-built test tracks, city-wide testing initiatives, challenge-based, co-development partnerships, and open testing on City-owned assets.

Examples of public sector innovation programs include:

City	Program Name	Model
Toronto	Transportation Innovation Zone	Approach: Challenge-based calls Location: Exhibition Place
Calgary	Living Lab	Approach: Open Call for Innovation Location: City-wide
Montreal	Quartier de l'innovation (QI)	Approach: Open Call for Innovation with academics, entrepreneurs and residents Location: 3 km ² experimental area
Ottawa	Area X.O	Approach: Open Call for Innovation Location: Dedicated facility with test track
Vancouver	TransLink Tomorrow	Approach: Open Call for Innovation Location: Various, depending on pilot

Vaughan's Transportation Innovation Program positions the city as a testbed for smart mobility innovations.

The TIP will provide a transparent, streamlined, fair and standardized process and framework to proactively test new innovative mobility on city space and/or infrastructure. The program has two key objectives:

1. Foster research and development, stimulate economic activity and tap into the technological and transportation expertise within Vaughan's talent pool to position the city as an innovation hub.
2. Advance mobility-related objectives as articulated in the Vaughan Transportation Plan:
 - Provide direction for transportation investments
 - Align with environmental and sustainability priorities
 - Facilitate transit supportive development
 - Provide safer and more accessible walking and cycling facilities

The Transportation Innovation Program is not a procurement tool and participants will not be offered preferential treatment in future procurement opportunities.

Companies interested in doing business with the city will be directed to existing procurement services. The program is also not a process for city-wide regulatory approvals, and it is not a replacement for all innovation initiatives.

Staff are proposing a phased approach to building the Transportation Innovation Program.

Based on best practices, staff is recommending a phased approach to the development of the TIP. The table below outlines the proposed phases of the program, which aim to foster transportation innovation in the City.

Vaughan Transportation Innovation Program	Transportation Challenge-Based Program (City-Wide)	Open Call for Transportation Innovation (City-Wide)	Co-Development Program	Innovation Challenges Beyond Transportation (City-wide)
Phase 1 (2023-2025)	Proposed to launch in 2023	Proposed in Phase 1, if external funding is secured	N/A	N/A
Phase 2 (2025+)	Continue in Phase 2, adapt with Phase 1 learnings	Continue in Phase 2, adapt with Phase 1 learnings	Further Study	Further Study

For Phase 1, staff have identified a challenged-based approach to be the most effective means of using existing city resources to foster innovation that aligns with the goals and needs of the city. An example of a challenged-based approach is the Mobility On-Request Maple-Rutherford GO Pilot Project where staff identified a challenge to help

commuters get a transit ride to and from Maple or Rutherford GO stations and sought potential solutions to pilot.

If external funding is secured, staff is proposing an open-call stream where innovators can propose their solution to the City for a demonstration opportunity. All testing under this stream will still be required to meet at least one of Vaughan Transportation Plan's objectives (See Attachment 1 for full guidelines) and minimum admission requirements. This open-call stream would support Economic Development's investment attraction objectives and allow the City to learn about a variety of transportation innovations.

In other jurisdictions, emerging approaches encompass co-development programs where cities actively engage in technology development alongside participants, including providing funding to the participants. Future phases of the TIP will require Council approval and would be based on the lessons learned from trials conducted in the first years of this program, as well as an assessment of the impact, benefits and risks.

The Transportation Innovation Program will leverage the existing innovation ecosystem partners to support during implementation.

The TIP is designed in consultation with industry and ecosystem support partners such as York Region, Ontario Centre of Innovation (OCI), York University, ventureLAB, Alectra, York Region Transit (YRT) and Toronto Transit Commission (TTC).

In January 2023, the Ontario Vehicle Innovation Network (OVIN) sought applications to fund an Innovation Demonstration Zone with \$2.5 million available over a 2-year period. Economic Development and Infrastructure Planning and Corporate Asset Management submitted an Expression of Interest to OVIN to create a Demonstration Zone using the TIP framework. Due to the similarities between the City of Vaughan and the City of Markham's submission, OVIN requested that the two cities become co-applicants and resubmit for consideration. Staff have been in discussion with the City of Markham on joint program delivery options.

In February 2023, The City of Vaughan and City of Markham resubmitted a joint funding application for the OVIN Demonstration Zone. If the joint application is successful in receiving OVIN's grant funding, both Markham and Vaughan staff are open to sharing the funding and resources to deliver the TIP demonstration projects (e.g., joint marketing and intake process, steering committee, outcomes development etc.).

Developing and expanding relationships with key innovation partners will help the City generate and retain economic benefits by enhancing support available to local SMEs. Economic Development will continue its work with innovation partners to anchor assets in Vaughan and position Vaughan's innovation economy for success.

The TIP will be jointly led by Economic Development and IPCAM, in collaboration with internal departments and external agencies.

The TIP will be designed according to the goals of the Vaughan Transportation Plan. Detailed program guidelines are included in Attachment 1.

As the program lead, joint responsibilities include:

- Identifying challenge themes in consultation with internal departments
- Issuing public calls for applications
- Setting minimum requirements (e.g, protections for safety, privacy, cybersecurity, liability, insurance and proven in lab setting)
- Develop evaluation criteria based on the uniqueness of the project, availability of city resources and geographic area etc.
- Reviewing applications against evaluation criteria and selecting participants
- Forming an Advisory Committee to oversee and review interest to participate in the demonstration project
- Acting as a facilitator between the innovators and demonstration sites with internal departments and partners
- Working with Legal Services to develop a standardized agreement with the applicant for the use of city space and/or infrastructure for testing
- Work with Advisory Committee and applicants to develop a detailed scope of work for a trial
- Coordinating with various city and regional departments including enabling use of city infrastructure for testing
- Requesting temporary bylaw exemptions
- Coordinating emergency response plans
- Coordinating with other municipal entities such as York Region to accommodate project requirements (e.g. traffic signal modifications)
- Drafting and a learning report on each trial project

While Economic Development and IPCAM are the lead departments for the TIP, other internal departments will have an ongoing role during implementation.

Each demonstration project approved will have its own dedicated Project Advisory Committee. This will be comprised of municipal decision-makers, industry experts, and external stakeholders. The purpose will be to provide input into the project, create a detailed scope of the trial, create evaluation criteria, help address barriers to implementation and support the overall success of the project.

Project Advisory Committee members include:

- Internal departments who would have vested interest in the challenge
- Internal departments who would need to give approval
- External agencies who would have vested interest in the challenge

- External agencies who would need to give approval
- External academia or SME who will provide appropriate evaluation criteria for the challenge

In the first phase of the TIP, staff is recommending all demonstration projects will not include an application fee to encourage companies to submit proposals to the City.

Future phases of the program may include an application fee to sustain the program.

Accepted participants in the TIP will have access to a real-world test environment in Vaughan, and an opportunity to demonstrate their technology to the City, the public, potential investors, partners, and customers.

Participants will have access to feedback from staff and partners about opportunities to improve their technology.

The Economic Development department will play a key role in facilitating customer-facing marketing events and inbound business development engagements with industry decision-makers. Additionally, the Economic Development staff, along with ecosystem partners, will help participants in navigating support resources. This includes referrals to the Vaughan Business and Entrepreneurship Centre (VBEC) with assistance on small business skills and training, referrals to funding sources available through other organizations, guidance in office site selection, and facilitating connections with potential clients or partners.

Next Steps

Staff recommend launching the Transportation Innovation Program in Q3 2023. If Council endorses the program, staff will begin work with internal departments to identify initial transportation-related challenges, create a standardized participant agreement, develop a marketing and communications plan, establish a Program Advisory Committee and continue collaborating with Vaughan's innovation ecosystem.

Financial Impact

The Transportation Innovation Program is funded through an approved capital budget. This capital budget accounts for costs related to the installation of temporary infrastructure to be determined as part of selected project initiation, such as signage, pavement markings, barriers and others to support the implementation of the limited-time trials. City staff will continue to pursue grants, partnerships and alternative funding opportunities.

Operational Impact

The Vaughan Transportation Innovation Program was created in consultation with internal stakeholder departments, including but not limited to:

- Economic Development
- Infrastructure Planning and Corporate Asset Management
- Legal Services
- By-law and Compliance, Licensing and Permit Services
- Policy Planning and Special Programs
- Corporate & Strategic Communications

Broader Regional Impacts/Considerations

Launching the Transportation Innovation Program is a new innovation asset that can strengthen Vaughan's position as a hub for innovation within both York Region, and the broader GTHA region, and would connect Vaughan's innovators to opportunities along the innovation corridor from Vaughan to Toronto.

Investments in expanded partnerships and physical testing sites would help Vaughan remain competitive relative to other innovation hubs. The TIP will be part of Vaughan's innovation assets and promoted as part of the broader regional ecosystem, leveraging regional strengths and strengthening ties to other partners and hubs.

Conclusion

By developing a Transportation Innovation Program, the City will gain a comprehensive understanding and knowledge of potential emerging transportation solutions and assess benefits and impacts prior to wider use. This program will also help Vaughan's emerging innovation cluster grow and expand its role as a leader in innovation.

Staff is recommending that Council:

1. Endorse the launch of the Transportation Innovation Program;
2. Authorize delegation of authority to enter into agreements with applicants, partners and stakeholders; and
3. Direct staff to enact all necessary by-law and policy amendments to allow for temporary testing within the TIP framework.

For more information, please contact:

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Attachment

1. Transportation Innovation Program Guidelines

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Approved by

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Reviewed by

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Nick Spensieri, City Manager