CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF JUNE 28, 2022

Item 44, Report No. 30, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on June 28, 2022.

44.   SMART CITY TASK FORCE – FINDINGS AND RECOMMENDATIONS REPORT (TRANSMITTAL REPORT)

The Committee of the Whole recommends approval of the recommendation contained in the report of the Smart City Task force dated June 21, 2022.

Recommendation

The City Clerk forwards the following recommendation on behalf of the Smart City Task Force:

1.   That the Smart City Task Force Findings and Recommendations Report [Attachment 1] be received and referred to staff for review.

Committee of the Whole (2) Report

DATE: Tuesday, June 21, 2022   **WARD(S):** ALL

TITLE: SMART CITY TASK FORCE – FINDINGS AND
                RECOMMENDATIONS REPORT (TRANSMITTAL REPORT)

FROM:
Smart City Task Force

ACTION: DECISION

Purpose
To forward for Council's consideration, the Smart City Task Force Findings and
Recommendations Report.

Report Highlights
- The Smart City Task Force is seeking Council's consideration of the
  recommendations contained in its Findings and Recommendations Report
  [Attachment 1].

Recommendations
The City Clerk forwards the following recommendations on behalf of the Smart City
Task Force:

1) That the Smart City Task Force Findings and Recommendations Report
   [Attachment 1] be received and referred to staff for review.

Background
In 2019, Council appointed the Smart City Task Force to advance a culture of
knowledge and pursue continuous improvement and to continue to provide advice to
Council and City Administration, including high-level political and community
perspectives into the development of a Smart City initiative which enhance urban life in
terms of people, living, economy, mobility and governance, and to endorse Smart City
technologies for Council's ultimate consideration.

The Smart City Task Force was tasked to develop recommendations on the following key objectives:

1. Identify areas of opportunities related to Smart City principles and technologies and recommend possible solutions including exploring the concept of:
    - Innovation development
    - Utilization of information and communication technologies to advance effective, efficient, transparent and accountable governance
    - Utilization of information and communication technologies, infrastructure and services to enhance urban living
    - Development and utilization of data to improve public services to enable an integrated, streamlined service experience and
    - Implementation of solutions to engage citizens and for the well-being of the community.

2. Identify opportunities to leverage partnerships and opportunities with relevant parties, including York Region, other local municipalities, governance organizations, other levels of government and the non-profit sector, to:
    - Achieve objectives of the Smart City Task Force;
    - Contribute to areas of common interest aligned with the City's participation in the Federal Government's Canada Smart City Challenge, the City-Wide Digital Strategy, and the 2018-2022 Term of Council Service Excellence Strategic Plan.

3. Identify and make recommendations related to emerging technologies.

Council appointed members of the Smart City Task Force include the following:
- Mayor Maurizio Bevilacqua, Chair
- Councillor Sandra Yeung Racco, Vice Chair

Stakeholder representatives:

Dr. Amir Asif	Nabila Alibhai (Stefanie Bonazza)
Daniel Hengeveld	Pina D'Agostino
Carly Livingstone	Richard Tam
Dr. Judy Farvolden	Ted Maulucci
Julie Morin	Thano Lambrinos
Lucy Casacia	Liana Di Marco (resigned March 2021)

Citizen members:
Mark Singh
Mary Proc
Rob Brickman
Vivek Khopkar

The Smart City Task Force, at its meeting on April 12, 2022, adopted recommendations in its Findings and Recommendations Report [Attachment 1] which are presented for Council's consideration.

Previous Reports/Authority
N/A

Analysis and Options
The Smart City Task Force was mandated to bring forward a Findings and Recommendations Report at the end of its term in April 2022, for consideration by Council.

Financial Impact
There are no financial impacts/implications related with this report.

Broader Regional Impacts/Considerations
N/A

Conclusion
The City Clerk is forwarding the recommendations contained in the Smart City Task Force Findings and Recommendations Report [Attachment 1] for Council's consideration.

For more information, please contact Todd Coles, City Clerk, Extension 8281.

Attachment

1. Smart City Task Force – Findings and Recommendations Report.

Prepared by
John Britto, Council / Committee Administrator, extension 8637.

**Smart City Task Force
Findings and Recommendations Report**

Vaughan Smart City – The Way Forward

June 2022

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Acknowledgments

Message from the Chair

We are pleased to present the Smart City Task Force Findings and Recommendations Report – a document that reflects our commitment to fostering a culture of knowledge and continuous improvement. As one of Canada's fastest-growing and most diverse municipalities, advancing Vaughan's Smart City initiatives is crucial to our ongoing success.

In 2018, I created the Smart City Task Force with Council's full support to make a meaningful impact on every aspect of citizen life. Together with task force members, we have come a long way on our shared journey to deliver on this key priority in Vaughan's Strategic Plan. Throughout this term, we have engaged in many meaningful discussions about improving economic competitiveness, advancing data initiatives, fostering innovation, and increasing engagement with stakeholders, community groups, and citizens in our city and beyond. This important work will shape our five-year Smart City plan and future Smart City policy.

Vaughan leads with innovation, imagination and creativity. We continue to take a Smart City approach to deliver efficient, reliable and innovative city-building. Our city is home to the Cortellucci Vaughan Hospital – Canada's first smart hospital, the Vaughan Metropolitan Centre — our emerging downtown core, Niagara University, subway connections and much more. From improving infrastructure and roads to recreation and healthcare, taking a Smart City approach to our work is fundamental to delivering a high standard of living and exceptional quality of life.

I want to extend my warmest and sincerest gratitude to all Smart City Task Force members, including Vice-Chair, Councillor Sandra Yeung Racco, staff, community partners and residents for their meaningful contributions to this important initiative. Together, we will continue to ensure Vaughan remains a Smart City leader.

Sincerely,

Hon. Maurizio Bevilacqua

Chair, Smart City Task Force

Mayor, City of Vaughan

Message from the Vice-Chair

Vaughan is a Smart City leader that seeks new opportunities to incorporate innovative solutions into our ongoing city-building efforts. From improving infrastructure and roads to recreation and healthcare, investing in Smart City initiatives is a step toward delivering an efficient, reliable and safe municipality, which is at the core of our forward-looking and progressive approach to city-building.

I am pleased to join Task Force Chair, Mayor Maurizio Bevilacqua, and the dedicated members to present the Smart City Task Force Findings and Recommendations Report. Our mandate is to continue to provide advice to Council and City administration on Smart City initiatives and best practices. Together, we have remained steadfast in our mission to advance Vaughan's Smart City agenda by taking a leadership role in innovation to prepare for future growth.

Taking a Smart City approach is fundamental to building efficient, dependable and uniquely pioneering cities; it will continue to create opportunities to encourage civic engagement, accelerate economic growth and generate greater efficiencies. These Smart City technologies will evolve the citizen experience, making it more accessible and productive for all. Moreover, it puts Vaughan on the leading edge of innovation to adapt to a growing community that values sustainability and creativity.

As we look toward the future, we remain focused on our efforts to build a safe, welcoming and engaged city where all people have every opportunity possible to live happy, healthy and fulfilling lives.

Councillor Sandra-Yeung Racco

Vice-Chair

Smart City Task Force Members
We want to thank all residents and stakeholders for your ongoing participation in the Smart City Task Force. We truly appreciate your time, talent, and input toward this critical initiative.

- Lucy Casacia, Vice President, Smart Solutions, WSP
- Daniel Hengeveld, Senior Director, Investment Attraction, Toronto Global
- Dr. Amir Asif, Vice-President Research & Innovation, York University
- Carly Livingstone, Executive Search for the Innovation Economy, Artemis Canada
- Nabila Alibhai, Advisor, Government and Industry Relations, Alectra Utilities
- Pina D'Agostino, Lawyer, Associate Professor, Osgoode Hall Law School, York University
- Dr. Judy Farvolden, Executive Director, University of Toronto, Mobility Network
- Thano Lambrinos, Vice President, Smart Building Technology & Digital Innovation, QuadReal Property Group
- Ted Maulucci, President, SmartONE Solutions Inc.
- Julie Morin, Director, IoT Solutions Smart Infrastructure, Microsoft Canada
- Rob Brickman, City of Vaughan resident
- Vivek Khopkar, City of Vaughan resident
- Mary Proc, City of Vaughan resident
- Mark Singh, City of Vaughan resident

Vaughan Smart City Project Team
- Michael Genova, Chief, Communications and Economic Development
- Frank Di Palma, Chief Information Officer
- Raphael Costa, Director, Economic Development
- Kathy Kestides, Director of Transformation and Strategy
- David Di Benedetto, Manager, Marketing and Creative Services
- Kitty Yung, Project Manager, Smart City Business Program

Purpose

This report outlines the findings and recommendations from Council's Smart City Task Force. The findings include a vision and guiding principles, launching a permanent Smart City function within the City's Strategic Economic Initiatives unit in Economic Development in the 2022-2026 Term of Council to advance initiatives outlined in the report, and the establishment of a Smart City Advisory Committee.

Report Highlights

- Vaughan is a Smart City leader that seeks new and meaningful ways to incorporate Smart solutions into ongoing city-building efforts.
- The Smart City Task Force met virtually from June 2020 to April 2022 to share knowledge and provide strategic input into developing Vaughan's Smart City vision, guiding principles, and projects to be implemented.
- The Task Force recommends that Vaughan adopt the mission to make the city "*a leading, exciting and resilient smart city through a collaborative transformation that enhances the quality of life for all residents*".
- The Smart City Task Force identified 4 critical Smart City strategic objectives for the 2022-2026 Term of Council:
    - Focus on Developing Infrastructure to Enable Smart Technology
    - Build Buy-in from Residents, Businesses and Stakeholders
    - Explore Opportunities for Collaboration to Enhance the Local Ecosystem and Generate Economic Opportunities
    - Implement a Governance Model to Oversee the Ethical and Responsive Use of Technology for Service Delivery

Recommendations

1. THAT Council endorses the launch of the Smart City Business Unit in 2023, subject to the approval of the Additional Resource Request (ARR) through the 2023 Budget process, and to incorporate Smart City development as part of the Economic Development department's business plan with the mission to make Vaughan "*a leading, exciting and resilient smart city through a collaborative transformation that enhances the quality of life for all residents*".

2. THAT Council endorses a Smart City program based on the following guiding principles:
    - People-first
    - Equitable, inclusive, and accessible
    - Accountable and transparent
    - Security and privacy-focused
    - Collaborative
    - Reliable
    - Connected

- Future-Ready

3. THAT Council endorses a Smart City program based on the following strategic objectives:
   - Focus on Developing Infrastructure to Enable Smart Technology
   - Build Buy-in from Residents, Businesses and Stakeholders
   - Explore Opportunities for Collaboration to Enhance the Local Ecosystem and Generate Economic Opportunities
   - Implement a Governance Model to Oversee the Ethical and Responsive Use of Technology for Service Delivery

4. THAT a Smart City Advisory Committee be established in the 2022-2026 Term of Council.

Background

1. City of Vaughan – A Leading Community for Smart City Development

Vaughan is transformative, ambitious, and purpose-driven, with York Region's largest economy and one of Canada's fastest-growing cities.

Exciting and ambitious projects continue transforming the community, such as the Vaughan Metropolitan Centre (VMC), the Cortellucci Vaughan Hospital (Canada's first smart hospital), the 900-acre North Maple Regional Park, a robust industrial and commercial base, and infrastructure investments like subway extensions and the newly opened Highway 427 extension.

Vaughan is one of Canada's fastest-growing cities, with a population of more than 340,000 that is projected to grow to 570,000 by 2051. Employment is expected to keep pace with population growth, increasing from 236,000 jobs in 2021 to over 350,000 jobs by 2051.

Vaughan's growth presents a range of opportunities which requires plans for strategic and thoughtful growth that is aligned with what our residents and businesses value most.

Vaughan's residents, businesses and stakeholders are the community's greatest assets in seizing our Smart City opportunities. Their participation in the Task Force was a key success factor.

Vaughan's Smart City Task Force launched during the 2018-2022 term of Council. Industry experts and residents were appointed to the Task Force.

The Task Force was mandated to make recommendations that ensure the city is advancing a culture of knowledge and continuous improvement to:

- Continue to provide advice to Council and City administration;
- Include high-level political and community perspectives in the development of Smart City initiatives; and
- Endorse Smart City technologies.

2. Smart City Background and Context

What is a Smart City?

Smart Cities add digital intelligence and leverage technology to solve civic challenges and improve residents' and businesses' quality of life and opportunity. A Smart City has the potential to, for example[1]:

- Save commuter and goods movement time by reducing traffic congestion through optimized signaling
- Lower the cost of living by reducing citizen expenditure on utilities through usage tracking data
- Deliver a cleaner and more sustainable city by reducing greenhouse gas emissions through improved energy use
- Enhance social connectedness to the community and government through digital channels
- Develop the local labour market by making it easier to access data-driven education and retraining through digital channels
- Improve public safety by using technology to deliver faster emergency services response times

How Smart Cities Emerge

As cities continue to implement new technologies, there are three levels of maturity in which they adopt smart methodologies[2]:

- **Smart Cities 1.0 – Technology-Driven**. Led by private sector technology providers and are primarily focused on the technologies themselves without properly understanding the implication of technologies and how they may impact cities and citizens.
- **Smart Cities 2.0 – Technology-Enabled, City-Led.** Government is leading the process to ensure that the technology solutions are enablers to improve the quality of life for citizens, businesses, and visitors.
- **Smart Cities 3.0 – Citizen Co-Creation**. Citizens and partners co-create to help drive the next generation of smart cities. Examples include co-development in projects, programs, services and sharing economy activities such as bike/car-share, repair cafés, and tool lending libraries to optimize underutilized resources.

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[1] "Smart cities: Digital solutions for a more livable future", June 2018. https://www.mckinsey.com/business-functions/operations/our-insights/smart-cities-digital-solutions-for-a-more-livable-future (accessed May 2, 2022)
[2]. "The 3 Generations of Smart Cities", August 2015. https://www.fastcompany.com/3047795/the-3-generations-of-smart-cities (accessed April 15, 2022).

Smart Cities: Best Practices in Ontario
According to the McKinsey Global Institute, a Smart City is judged on three criteria:
1. Its Technology Base
2. The Rollout of Applications and Digital Services
3. The Public Adoption of Digital Services

Typically, a city will deploy programs in these three areas to solve the community's challenges. For example, the City of Pickering needed to fill a gap in Wi-Fi access. As such, the municipality deployed more than 35 wireless hotspots to public facilities and parks to provide their residents with reliable and robust broadband services. In 2017, they took the project one step further by lending portable internet devices with unlimited data to residents for up to two weeks. Vaughan has similarly implemented complimentary Wi-Fi access at municipal facilities, and through the Vaughan Public Libraries, residents can loan out MiFi wireless hotspot devices, iPad, GoPro, and GPS.

3. City of Vaughan is recognized as an Early Adopter of Smart City Solutions

Vaughan is a Smart City leader that seeks new and meaningful ways to incorporate data-driven technological solutions into our ongoing city-building efforts. Vaughan's Mayor and Council have taken a leadership role in innovation to prepare for planned growth. Vaughan's smart city and digital initiatives are at the core of efforts to improve the quality of life and standard of living for our residents and provide our businesses with a climate for growth.

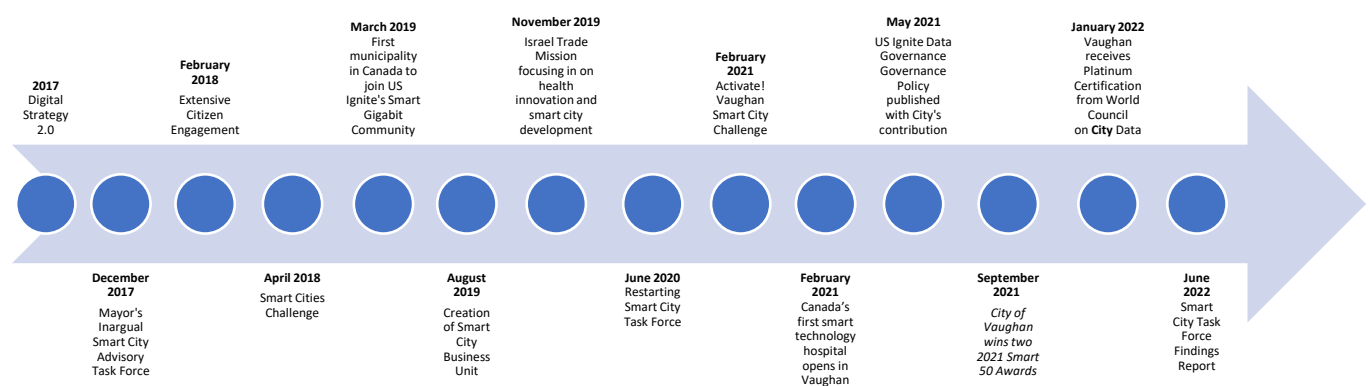**Vaughan's Smart City Journey and Past Accomplishments**

2017 Digital Strategy 2.0

February 2018 Extensive Citizen Engagement

March 2019 First municipality in Canada to join US Ignite's Smart Gigabit Community

November 2019 Israel Trade Mission focusing in on health innovation and smart city development

February 2021 Activate! Vaughan Smart City Challenge

May 2021 US Ignite Data Governance Governance Policy published with City's contribution

January 2022 Vaughan receives Platinum Certification from World Council on **City** Data

December 2017 Mayor's Inargual Smart City Advisory Task Force

April 2018 Smart Cities Challenge

August 2019 Creation of Smart City Business Unit

June 2020 Restarting Smart City Task Force

February 2021 Canada's first smart technology hospital opens in Vaughan

September 2021 City of Vaughan wins two 2021 Smart 50 Awards

June 2022 Smart City Task Force Findings Report

Figure 1: Vaughan's Smart City Journey, 2017 to 2022

Mayor Bevilacqua established the inaugural Mayor's Smart City Advisory Task Force to advance a culture of knowledge and pursue continuous improvement (2017)

In 2017, Mayor Bevilacqua established the first Mayor's Smart City Advisory Task Force. The group included members with extensive professional experience in arts, culture, and media; city infrastructure; construction and development; education; environmental sustainability; financial services; healthcare; information and technology; innovation and research; manufacturing; and social issues. There were also seven citizen representatives on the task force.

Through engagement, residents identified opportunities for Vaughan's future:
1. People wanted to see more connected and vibrant communities with a strong "One Vaughan" sentiment.
2. Residents noted the need for mental health awareness and the building of inclusive communities to encourage the participation of all citizens, including the marginalized, youth, aging residents, newcomers, etc.
3. Citizens also expressed the need to make Vaughan the place to be, emphasizing building a vibrant Vaughan with more jobs, entertainment, and programming.

The inaugural Task Force made five recommendations that the city has acted on:

Recommendations	Status
1. The City of Vaughan recognizes and incorporates Smart City as a priority this Term of Council Service Excellence Strategic Plan	Completed
2. A Smart City citizen engagement plan be developed	Completed
3. Continuation of the Mayor's Smart City Advisory Task Force for the next term of Council	Completed
4. The Economic Development department has been identified in the Corporation's Organizational Structure as the lead for all Smart City initiatives	Completed
5. Staff in Economic Development department prepare a multi-year business plan, strategic roadmap, and budget for inclusion in the Budget process	In Progress

In addition to the recommendations listed, the inaugural task force submitted a comprehensive submission for the City's participation in the Government of Canada's Smart Cities Challenge. The proposal called for the creation of a "Digital Garden", which are connected service kiosks across the community. The project aims to break down barriers, improve social cohesion and enhance engagement and civic participation. Kiosks would include Internet of things (IoT) sensors to gather data on traffic, parking, and air quality; provide administrative City services, such as online payments and digital deputations; and offer a one-stop shop for government services, including Service Ontario offerings, among other amenities. This project is identified for further development in the next council term (2022-2026), subject to budget.

smARTcities: exploring the digital frontier, Curated Art Exhibition at Vaughan City Hall (2018)

The City of Vaughan curated an [art exhibition](#) at Vaughan City Hall to interpret the global concept of Smart Cities to convey the potential for Smart City technology to transform Vaughan. The goal was to foster public engagement for Vaughan's leadership in Smart City adoption and to encourage new perspectives and insights into the complex concept of Smart Cities through the interpretive lens of visual art. Several works commissioned for the exhibition were acquired for the City of Vaughan's Corporate Art Collection and are currently on display at Vaughan City Hall.

City of Vaughan extends global presence as a Smart City leader at the 2019 Smart City Summit and Expo

In March of 2019, Vaughan took part in the 2019 Smart City Summit and Expo in Taipei, Taiwan. Each year, this international conference brings together thought leaders from local governments and recognized professionals from public and private-sector organizations. Vaughan's participation in the global conference presented opportunities to share existing best practices, learn about emerging and innovative trends in city-building and actively engaged economic development leads. This opportunity led to participation in the Global Smart Giga-Bit community.

Vaughan becomes the first Canadian municipality to join US Ignite (2019)

Vaughan is the first Canadian municipality to join US Ignite. This non-profit organization promotes international leadership to develop new applications and foster an environment for local governments and technology partners to work together to improve the lives of citizens through cutting-edge solutions. This partnership will continue to help Vaughan press ahead with our focused efforts to embrace the transformational benefits of Smart City technology and initiatives.

Vaughan was awarded the highest level of certification from the global leader on standardized metrics for the fifth year (2019)

Vaughan has been awarded Platinum ISO 37120 certification for 2019 from the World Council on City Data (WCCD). This recognition is the highest level of certification from the WCCD – a global leader in standardized data that helps create smart, sustainable, resilient, and prosperous cities. This was the fifth year that Vaughan has received this prestigious recognition, which is a testament to our administration's long-standing commitment to advancing a robust and purposeful Smart City agenda. Vaughan reported 90 key performance indicators (KPIs) used to measure performance on City services and quality of life to attain this certification.

Canada's first smart hospital opened in Vaughan to provide world-class healthcare (2021).

Vaughan is emerging as an epicentre of healthcare excellence in Canada. On June 6, 2021, Cortellucci Vaughan Hospital opened as a full-service hospital. Mackenzie Health re-envisioned its care delivery model to embrace a connected health strategy that utilizes digital communications and the Internet of Healthcare Things (IoHT) to provide quality health care inside and outside the traditional hospital setting. The Cortellucci Vaughan Hospital is the first hospital in Canada to feature fully integrated smart technology systems and medical devices that can communicate directly with one another to maximize information exchange.

Vaughan Healthcare Centre Precinct feasibility study to put healthcare in Vaughan at the forefront is completed (2021).

In a first-of-its-kind initiative in Vaughan, the city is leading a collaboration to transform an 82-acre parcel of land at Jane Street and Major Mackenzie Drive into the Vaughan Healthcare Centre Precinct. In October 2019, Vaughan entered a memorandum of understanding (MOU) with York University, Mackenzie Health and ventureLAB to undertake a feasibility study to identify the best use of lands surrounding the site of the Cortellucci Vaughan Hospital (CVH), known as the Vaughan Health Centre Precinct (VHCP).

The vision for the VHCP is a world-class, health innovation destination that will enhance Vaughan's social and economic vitality while also producing regional and extra-regional economic impact. The VHCP will be a destination for excellence in health research, education, commercialization, and innovation. In addition, the VHCP will be an epicentre for collaborative development of next-generation solutions to policy, systemic, care delivery and technological challenges. The collaboration will focus on four areas:

1. Translating Research & Innovation to Policy & Practice - Opportunities to improve quality of care and enable "care without walls" by translating health research and innovation into policy and practice.
2. Data Analytics, Machine Learning & Smart Technology - Pair the hospital's smart technology with York University's data analytics and machine learning expertise to advance the quality and efficiency of care.
3. Data Analytics, Machine Learning & Smart Technology - Collaboration focused on advancing innovative technologies, attracting, and retaining talent, driving economic growth, and creating social impact for the City of Vaughan and the broader region.
4. Preparing the future workforce - Creating experiential and integrated work opportunities to train the next generation of healthcare professionals to utilize modern, world-class practices and be proficient with the latest technologies.

New and innovative technologies advanced Vaughan's Smart City agenda with Smart50 awards (2021).

Vaughan is a two-time recipient of the 2021 Smart50 Awards for the Winter Maintenance Artificial Intelligence System and the LED Streetlight Retrofit Program. The Smart50 Awards were created in partnership with Smart Cities Connect, Smart Cities

Connect Foundation, and US Ignite to honour the 50 most innovative and transformative municipal-scale Smart Cities projects globally.

4. Current State: Vaughan's Smart City Projects

The following section highlights selected Smart projects that are currently underway or planned. The projects are categorized by the City's five smart city strategic themes - Mobility, Economy, Community, Sustainability and Government.

	Smart Mobility	Smart Economy	Smart Community	Smart Sustainability	Smart Government
Activate!Vaughan Innovation challenges		√	√	√	√
Digital Main Street Program		√			
Digital Permits		√			√
Digital Strategy			√		√
EV Charging Stations				√	
Garbage bin sensors pilot					√
Igniting Insight | GIS and Analytics in Fire Services			√		√
IrisGO for Road Operations					√
Lendery, tool/equipment sharing at Pierre Berton Resource Library			√	√	√
MiFi Wireless Hotspots portable devices			√		√
MoveSmart Mobility Management Strategy	√				
Future new vaughan.ca website			√		√
Rutherford and Maple GO Mobility On-	√				

	Smart Mobility	Smart Economy	Smart Community	Smart Sustainability	Smart Government
Request Pilot Project					
Service Vaughan: Enhancing the Citizen Experience			√		√
Sewer Flow Monitoring					√
Smart Buildings - Card Security System, CCTV					√
Smart Hydrants				√	√
Smart Parks			√		√
Smart Streetlights – LED Streetlight Retrofit Project				√	
Stormwater Ponds Automated Monitoring				√	√
Traffic Data Management Program	√				
US Ignite Smart Gigabit Communities			√		√
Vacant Land Directory		√			
Vaughan Engagement Strategy	√	√	√	√	√
Vaughan Public Wi-Fi			√		√
ventureLAB Innovation Space		√			
Where's My Plow					√
Winter Maintenance Artificial Intelligence System				√	√

	Smart Mobility	Smart Economy	Smart Community	Smart Sustainability	Smart Government
World City of Council Data ISO Certifications			√		√

MoveSmart Mobility Management Strategy (vaughan.ca/MoveSmart)
Portfolio lead: City of Vaughan Public Works

The MoveSmart Mobility Management Strategy consists of four programs that support each other. The four programs are Road Safety, Mobility Management, Sustainable Mobility, and Traffic Data Management. MoveSmart is a crucial initiative as traffic and congestion are top of mind for Vaughan's residents. At the core of the strategy is the Traffic Data Management Program. The tool will interface with data collection devices and will have the ability to assess and analyze the data so that the city can make evidence-based decisions.

LED Streetlight Retrofit Program (vaughan.ca/LED Streetlights)
Portfolio lead: City of Vaughan Infrastructure Development

Vaughan's streetlight network represents approximately 20 per cent of the City's overall energy consumption. Through this program, about 24,000 new streetlights have been installed city-wide. The benefits of LED Lights include 50 per cent less energy used when compared to the previous light bulbs.

This program also included smart technology upgrades, such as installing a web-enabled lighting control system that will allow for remote monitoring, operation, and maintenance of all the LED lights. This provides accurate energy metering per streetlight, integrated GPS for real-time streetlight performance reporting and the ability to turn on, dim or turn off streetlights remotely. As a result, approximately $1 million of savings will be achieved annually. The new LED lights are also more reliable, will help reduce greenhouse gas emissions, and improve roadway safety.

Digital Strategy (vaughan.ca/DigitalStrategy)
Portfolio Lead: City of Vaughan Office of the Chief Information Officer

The strategy defines how the city will interact with citizens digitally, including engagement, access to data and content, public connectivity, digital literacy, eServices, and mobile apps, focusing on Vaughan's internal digital transformation.

The Digital Strategy has four themes:
- An Engaged Community
- Citizens can do business with the city through digital channels
- Be Open
- Internal Digital Transformation.

Upcoming Digital Strategy projects include a new vaughan.ca website and a virtual attendance tracking program.

World Council of City Data – ISO Certifications (vaughan.ca/ServiceExcellence)
Portfolio Lead: City of Vaughan Office of Transformation and Strategy

Vaughan was awarded the highest level of certification from the global leader on standardized metrics for the fifth year. Vaughan reported 90 key performance indicators (KPIs) used to measure city services and quality of life performance. In addition, the city is in the process of completing the ISO certification for smart cities.

Winter Maintenance Artificial Intelligence System (vaughan.ca/Snow)
Portfolio lead: City of Vaughan Public Works

Vaughan is the first municipality in Canada to adopt a smart-technology artificial intelligence tool to allocate resources better and reduce salt usage in winter road maintenance. Using sensors, this tool considers various factors – including weather models, Vaughan's micro-climates, traffic volumes and road conditions – to help inform road winter maintenance decisions. Since adopting this innovative AI technology, the city has reduced salt usage by 30 per cent each winter and has achieved an annual savings of approximately $400,000.

Smart Hydrants (vaughan.ca/Water)
Portfolio lead: City of Vaughan Public Works

The City of Vaughan installed five Smart Hydrant kits as a pilot project. The devices provide the city with useful insights into the water system, such as drops in pressure and temperature information. A Smart Hydrant's main function is to identify potential leaks within our infrastructure and their locations while generating alerts to operations staff for follow-up actions in the field. The city is now working to secure 10 more Smart Hydrant kits to add to its infrastructure.

Garbage Bin Sensors Pilot
Portfolio lead: City of Vaughan Public Works

Garbage bin sensors are placed under the lids of select waste bins allowing Parks staff to monitor fill-levels remotely and receive notifications when they need to be emptied. The sensors use real-time and historical data to optimize waste collection schedules allowing staff to save on fuel, labour, and fleet maintenance. The route optimization within this tool also allows for fewer trucks operating, which means fewer carbon emissions, noise, traffic, and wear and tear on roads.

Findings and Recommendations

Build on Continued Success

The first Smart City Task Force's efforts led to budget approval of a new Smart City study to aid in the establishment of Vaughan's first-ever Smart City business unit within the Economic Development department. A dedicated team is leading the efforts to identify opportunities and establish partnerships with stakeholders both in Canada and around the world.

This term of the Smart City Task Force (SCTF), chaired by Mayor Maurizio Bevilacqua and Vice-Chair Councillor Sandra Yeung Racco, met virtually to continue advancing the culture of knowledge sharing on best practices to move Vaughan forward on its smart city initiatives.

Move Vaughan Smart City Forward

Beginning in June 2020, the Smart City Task Force discussed Vaughan's smart city vision, guiding principles, data and privacy, governance, smart city themes and recommendations on smart city priorities for the next term of Council.

Vision
what we aim to achieve

↓

Guiding Principles
values that guide our work

↓

Themes
focus areas to achieve vision

↓

Recommendations
actionable tactics to be included in the implementation plan

↓

Launch the Smart City Program
approval in 2023 budget process

Approach

The Smart City Task Force Findings Report is the cumulation of the following initiatives:
- Extensive Citizen Engagement
- Interviews with Internal City of Vaughan Staff
- Review of Best Practices for Smart City in Other Cities
- Meetings with Smart City Stakeholders and Partners
- 9 Smart City Task Force Meetings
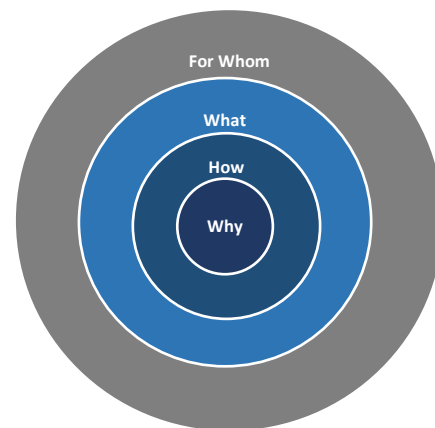
Recommended Vaughan Smart City Vision

The Task Force has recommended that Vaughan adopt a cohesive smart city vision that focuses on its people rather than technology. Vaughan Smart City will use data and technology to advance solutions to civic challenges. After multiple discussions and iterations, the Smart City Task Force recommends the following vision statement for Vaughan:

Vaughan will become a leading, exciting, and resilient smart city through a collaborative transformation that enhances the quality of life for all residents.

The recommended vision clearly defines why, how, what, and for whom the city is undertaking Smart City.

Vaughan will become a leading, exciting, and resilient smart city through a collaborative transformation that enhances the quality of life for all residents.

- **Why**: Enhance the quality of life
- **How**: Collaborative transformation
- **What**: Leading, Exciting, Resilient
- **For whom**: all residents

Recommended Vaughan Smart City Principles

Using emerging technology and adopting innovative solutions can be challenging on many levels. The following principles will guide the City's smart city plans, projects, and actions.

1. People-first
2. Equitable, inclusive, and accessible
3. Accountable and transparent
4. Security and privacy-focused
5. Collaborative
6. Reliable
7. Connected

8. Future-Ready

Smart City Themes

The Task Force distilled Vaughan's goals into five smart city themes to guide development that aligns with the recommended vision and principles. The themes upon which Smart City projects are recommended are:

1. **Smart Mobility** - *Safe movement of people, goods, and services*.
   Focus includes the ability to move around the city as easily as possible using different modes of transportation.
2. **Smart Economy** - *Driving opportunity and productivity.*
   Focus includes workforce and talent development, attracting, and retaining technology companies, entrepreneurship ecosystem development, and partnership development with academic institutions.
3. **Smart Community** - *Engaged and connected community*.
   Focus includes the engagement of people to develop an inclusive and equitable city and to enhance connectivity within the community.
4. **Smart Sustainability** - *Safeguarding our future.*
   Focus includes being better equipped to withstand the stresses of an urban and suburban community.
5. **Smart Government** - *Providing Services, Better.*
   Focus includes developing vibrant spaces, better municipal service delivery and easier access to programs and services.

Strategic Objectives and Actions

The Smart City Task Force recommends the following strategic actions be included in the implementation plan to help guide the vision to reality.

1. **Develop infrastructure to enable smart technology**
   Infrastructure is at the core of a smart city. This includes physical and digital systems that connect various technology and data assets to streamline the flow of information.

   Suggested actions include:

   - Build and advance capacity for technology and digital infrastructure foundations (physical objects and structures, cabling and network systems, software systems, data analytics and standards, security)
   - Be future-ready for new opportunities (e.g., 5G)

2. **Build buy-in with residents, businesses, and stakeholders**
   Successful smart cities foster inclusion. It is important to communicate and

involve Vaughan residents, businesses, and stakeholders in Vaughan's smart city initiatives.

Suggested actions include:
- Revamp the Vaughan smart city website to share stories to highlight how citizens are benefiting from innovation, every day. Use various communication channels to share current and upcoming initiatives.
- Participate in outreach activities to educate and inform residents on the benefits of smart city projects. Identify a physical site to showcase smart city innovation and successes.
- Prioritize inclusion in urban development and technology deployment, ensuring that people who have a disability or other disadvantage are included.
- Leverage the Smart City Advisory Committee to identify future smart city opportunities and use cases.

3. **Grow the Smart City ecosystem: Explore opportunities for external collaboration and generate economic opportunities**
Partnerships are key to unlocking the potential of smart communities. Vaughan should continue to embrace a culture of working with external stakeholders.

Suggested actions include:

- Develop channels for citizen co-creation like hackathons for entrepreneurs and small businesses
- Review existing policies and develop programming to make it easier for R&D innovations and smart city technology demonstration including proof of concepts and pilots

4. **Implement a governance model to oversee the ethical and responsive use of technology for service delivery**
The City needs to develop a policy to guide the ethical and responsive use of smart technologies to support Vaughan's smart city vision and safeguard residents' data and privacy.

The future Smart City policy should include the following:
- **Privacy**: There is a need to balance privacy with potential operational improvements. The city will provide assurance to residents about the privacy of the data collected with clear communication and transparency.
- **Data security and ownership**: Increase security in data collected and ensure that controls are in place to protect personal and sensitive information. The City should start by owning all data collected and data ownership should be set up in a manner that meets the IT data security requirements and provides direct access and control to the City of Vaughan.

- **City Data sharing:** Vaughan should work towards accessible and open data. A starting point would be to explore a 2-way data-sharing agreement with key stakeholders. The City can take a lead in collecting data from industry, private, and other 3rd parties to consolidate in a Vaughan Data environment.
- **Partnerships**: Success in smart cities is built on collaboration with external stakeholders. The policy should address how Vaughan can collaborate with stakeholders and a partnership governance model for smart technology deployment.
- **Procurement and Funding**: Think outside the box and design alternative approaches to traditional financing models. For example, develop pilot fund accounts like the City's innovation reserve, revenue sharing agreements, and other public-private partnerships. The City should also refresh procurement policies to enable innovation and emerging technology.

Smart City Priorities – Looking Ahead

The Smart City Task Force discussed **new** projects that will offer city-wide benefits. The following outlines the projects and proposed timelines to assess their implementation feasibility subject to budget and the appropriate policy framework:

Initiative	Description	Strategic Theme	Objective	Timeline
Smart Kiosks	A smart kiosk is an interactive screen typically installed in a public space that provides users or visitors with essential information and services. The kiosk will also feature sensors or other data collection elements such as cameras, environmental sensors, motion detectors, people counting, etc. This is advancing and building on the 2018 Smart City Challenge submission. Potential use cases can be sharing City	Smart Government Smart Community	Build Buy-in	Short Term

	information, providing access to Wi-Fi, making phone calls, wayfinding, promoting local events, artists, and small businesses.			
Smart Residents Platform	A physical smart card, mobile app platform or portal which provides residents with individually tailored, location-specific information and services that can be delivered via email, text messages and personal resident accounts. Partners can include development stakeholders and property managers. A potential use case can include recreation programs registration, notifications about city news, disruptions, and closures, and requesting various city services.	Smart Government Smart Community	Develop Infrastructure Build Buy-In	Mid to Long Term
Digital 3D View of a City (Digital Twin)	When smart cities need to make planning, infrastructure, and services decisions, a digital 3D view of a city is a visualization tool that viewers can use to create virtual cityscapes to model scenarios and understand impacts. A potential use case can be to improve understanding and articulate ideas in urban planning, transportation, environmental, and	Smart Government Smart Community	Develop Infrastructure Build Buy-in	Mid Term

	economic development, and tourism marketing.			
Digital Infrastructure Platform	Municipalities are benefiting from technology advancements and are now an important part of smart city infrastructure. The city should implement digital infrastructure that enables future-ready, widely-adopted, interoperable, standards-based technology to power digital services that encourage diverse economic participation to deliver value to the community. Potential use cases to support the use of data and evidence in decision making including air quality monitoring, building retrofits, and parking monitoring.	Smart Government	Develop Infrastructure Develop strong governance	Short Term and Ongoing
Smart City Incubator and Accelerator	The City of Vaughan is working on attracting a key smart city community asset to support the creation and growth of innovators and start-ups in the emerging technology industry. By fusing mentorship, education, talent development and seeding funding for prototyping, a smart city incubator can be a multi-directional pipeline	Smart Economy	Grow the Ecosystem Build Buy-In	Mid to Long term

	for intellectual property development and to position Vaughan as a desirable location for the smart city sector.			
City Innovation Challenges	Activate!Vaughan a key innovation program is a key opportunity to connect high-potential start-ups and scale-ups to market-driven entrepreneurship opportunities and mentorship from industry leaders and multinationals. The next iteration of the program may include corporate innovation programming for Vaughan-based companies looking to leverage innovation and emerging technology to solve business challenges.	Smart Economy Smart Government Smart Community	Grow the Ecosystem Build Buy-In	Short Term
Learning Neighbourhoods (Densification Nodes)	City of Vaughan aims to build complete and connected neighbourhoods for future intensification areas. City staff is exploring opportunities to collaborate and partner with the real estate development industry and key stakeholders to incorporate smart city technology integration within a neighbourhood. City staff is creating a case study for the Yonge and Steeles Corridor.	Smart Community	Develop Infrastructure Grow the Ecosystem	Mid to Long Term

Smart City enabled, purpose-driven civic engagement	Civic engagement is a key part of a smart city's evolution. Interconnected relationships between people, places and organizations create a dynamic city. Vaughan can develop new methods to capture civic feedback and allow Vaughan to centralize and analyze all the data collection to link the feedback to innovations and improvements. Online platforms could allow the voting of ideas.	Smart Community	Build Buy-in Grow the Ecosystem	Mid to Long Term

Building the Smart City Team

## *Governance and Operational Model*

Smart City transformation continues to be a long-term strategic priority for Vaughan. The Smart City Task Force recommends dedicated resources allocated in the City's 2023 budget to establish a permanent business unit that can effectively address and respond to future municipal challenges.

Four unique groups – Vaughan Council, the Smart City Team, the Smart City Advisory Committee (external), and the Smart City Working Group (internal) – will work together to advance Vaughan's Smart City initiatives and task force recommendations.

The Smart City unit will work within Economic Development as a key Strategic Economic Initiative in the City Manager's portfolio. Strategic Economic Initiatives was recently established as a business unit within Economic Development. Its objective is to develop economic assets that will create a climate for job creation in Vaughan. Alongside Smart City, the Strategic Economic Initiatives unit works on the Vaughan Healthcare Centre Precinct, Public Art, the Vaughan Metropolitan Centre's proposed Cultural Arts Centre, and revenue-generating partnerships.

One of the main objectives for the Smart City unit in 2023 will be to support the development of key smart city projects, both internally and externally.
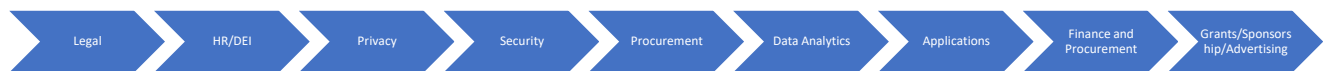
Organization Structure
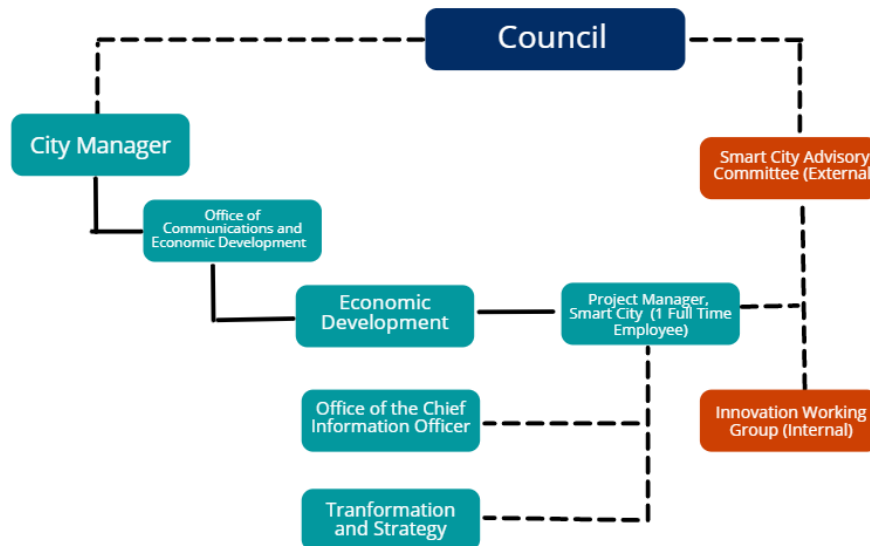
Roles and Responsibilities

- **City of Vaughan Council**: Vaughan's Council will continue to provide leadership and set the direction for Vaughan. Council is our greatest ambassador to profile and promote Vaughan as a Smart City leader. Council will be the ultimate decision-maker for smart city initiatives.
- **Smart City Business Unit:** The Smart City team will be embedded in the newly formed Strategic Economic Initiatives unit in Economic Development (Office of the Chief Communications and Economic Development), with advisory support from cross-department expertise from Office of Transformation and Strategy, the Office of the Chief Information Officer, and Corporate and Strategic Communications. Responsibilities include policy development, Smart City promotion and education, reporting of overall progress, partnership establishment, general and project governance, and introducing new approaches to problem-solving.
- **Vaughan Smart City Innovation Working Group (Internal):** A new proposed smart city innovation working group will consist of internal champions amongst City staff to move forward on key city-wide smart city initiatives.
  - Mandate: The objective of this internal working group is to explore the feasibility of newly proposed ideas and develop a detailed scope to pilot and implement projects.

City-wide Innovation Working Group (Internal)
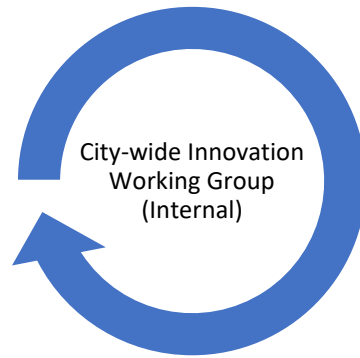
- City Portfolios including:
  - Mobility and Transportation
  - Infrastrcture Development
  - Community Services
  - Economic Development
  - Parks
  - Forestry and horticulture
  - Environmental Services

This group will be supported by staff from:

Legal → HR/DEI → Privacy → Security → Procurement → Data Analytics → Applications → Finance and Procurement → Grants/Sponsorship/Advertising

- **Smart City Advisory Committee (External):** The Smart City Task Force recommends that the group be re-established as an Advisory Committee to the City in the 2022-2026 term of Council.
  - o Mandate: Smart City Advisory Committee will provide guidance and insights to staff on new and ongoing smart city projects

Next Steps

The Smart City Task Force recommends Council to continue investing in Smart City initiatives for the 2022-2026 term of Council. Staff will be submitting an Additional Resource Request (ARR) as part of the Vaughan 2023 budget process to launch the Smart City Unit. In addition, Smart City development will be incorporated as part of the Economic Development department's business plan. Lastly, staff will begin forming the internal working group to implement Smart City Task Force's recommendations.