CREATING A COMPLETE DESTINATION

TRANSIT ORIENTED DEVELOPMENT

INTERACTIVE CORRIDOR ECONOMY

"INVENTING THE FUTURE TODAY"

"REDUCING THE CARBON FOOTPRINT"

"GROW TALL, OR PLANNED INFILL, BUT NOT SPRAWL"

1. CONDUCT CORRIDOR FLEASIBILITY STUDY TO DETERMINE THE ECONOMIC OPPORTUNITY
2. GROW STOUFFVILLE GO TRANSIT DAILY RIDERSHIP TO 400,000 BY 2063
3. BUILD 400,000 CONDO UNITS IN THE STOUFFVILLE CORRIDOR BY 2063
4. CREATE 400,000 GOOD PAYING JOBS IN THE STOUFFVILLE CORRIDOR BY 2063
5. CREATE TWO-WAY, ALL DAY PREDICTABLE SUBWAY STYLE TRANSIT SERVICE
6. CREATE A CORRIDOR WHERE PEOPLE WANT TO LIVE, WORK, PLAY AND VISIT
7. CREATE AFFORDABLE TRANSIT ORIENTED DEVELOPMENT (TOD) COMMUNITIES
8. DEVELOP TOD TRAIN STATIONS AS RETAIL, EMPLOYMENT AND ENTERTAINMENT CENTERS
9. CONDUCT VERTICAL FARMING, AUTONOMOUS VEHICLES AND WASTE TO ENERGY PILOTS
10. CREATE A MAJOR SPORTS/ENTERTAINMENT DESTINATION AT 407/KENNEDY STN HUB
11. UTILIZE INFRASTRUCTURE, LAND AND FINANCIAL ASSETS EFFICIENTLY
12. ENSURE STAKEHOLDERS AND RATEPAYERS ARE INVOLVED IN THE PLANNING PROCES
13. TRANSFORM THE STOUFFVILLE GO LINE TO AN LIGHT RAIL TRANSIT LINE (LRT) POWERED BY HYDROGEN FUEL WHICH CAN COEXIST WITH THE UP EXPRESS POWERED BY DIESEL FUEL, INSTEAD OF ELECTRICIFYING THE STOUFFVILLE GO TRANSIT LINE

Notice of Motion: **Reimagine the Stouffville GO Transit Corridor**

Moved by: Regional Councillor Jim Jones

Seconded by: Councillor Keith Irish

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MARKHAM

Jim Jones
Regional Councillor

DEAR STAKEHOLDERS, DEVELOPERS, LANDOWNERS, AND RESIDENTS: **DECEMBER 5, 2023**

I am writing to emphasize the remarkable parallels between the meticulous planning and design of transit-oriented development (TOD) and the strategic design and engineering of a computer's motherboard and the Internet's World Wide Web Integrated Data Network. Both endeavors, though seemingly distinct, share fundamental principles that underscore their transformative potential. Long term planning must include detail financial justification as well as the following:

1. **SYSTEMATIC DESIGN:** Just as a computer's motherboard is meticulously designed to ensure seamless functionality, TODs require systematic and financial planning. From land use to transportation infrastructure, every element must integrate harmoniously to create efficient public realm and livable urban environments.
2. **INTEGRATION:** In both scenarios, integration is paramount. Just as a computer's components must work together seamlessly, TODs must combine housing, commercial spaces, employment, institutional buildings, entertainment, recreational spaces, green areas, and transit options to create great spaces, comprehensive, and character communities.
3. **EFFICIENCY:** System engineers optimize component layout for efficiency and reduced energy consumption. Likewise, TODs prioritize efficiency by reducing traffic congestion, minimizing air pollution, and promoting public transportation to lower the reliance on private cars.
4. **CONNECTIVITY:** Just as a computer's components need robust connectivity, TODs focus on well-planned public transportation networks, pedestrian-friendly pathways, and bike lanes to enhance mobility for residents.
5. **SUSTAINABILITY:** Sustainability is a shared goal. Both computer motherboards and TODs should prioritize energy efficiency and green building practices to minimize the environmental impact.
6. **USER-CENTRIC APPROACH:** A user-centric approach is vital in both realms. Engineers consider the end-user experience in computer design, while TODs aim to create attractive, livable spaces where residents can live, work, play, and thrive.
7. **SCALABILITY:** Both computer motherboards and TODs must be scalable and adaptable to future needs and advancements, ensuring long-term relevance.
8. **SAFETY AND RELIABILITY:** Reliability is essential in both contexts. Just as a computer must function flawlessly, TODs must provide safe and reliable public facilities and transportation services for residents.
9. **TESTING AND ITERATION:** System engineers iterate their designs through testing and feedback, and the same iterative approach should apply to TODs, with pilot projects and community input to enhance functionality and appeal.
10. **LONG-TERM VISION PLANNING:** Both endeavors require a long-term vision to remain effective over time, considering evolving technology and societal needs.

The comparison of TODs to the transformation brought about by the World Wide Web (WWW) underscores the magnitude of this vision. Just as the WWW revolutionized the internet, Metrolinx's GO Transit Network and TODs along the Stouffville line aspires to transform it into a self-sustaining dynamic economy. This transformation aims to create jobs, housing, shopping, entertainment, and transit opportunities on a large scale.

To achieve this vision, meticulous planning and integration of functions are indeed crucial. It necessitates a collaborative approach that transcends property lines and ownership, designing TODs based on their optimal functions within the broader network. This holistic perspective ensures the creation of thriving, integrated transit-oriented development. Planning at the corridor level for TODs offers numerous advantages, including economic, environmental, social, and quality of life benefits. It can help create more sustainable, vibrant, and accessible communities while reducing the negative impacts of urban sprawl and car-centric development.

In conclusion, I commend Metrolinx and the Province for embarking on this transformative journey with us. The parallels between planning a Rail Transit Integrated Corridor Network with complete destination TODs and the design and engineering of the World Wide Web (WWW) along with that of a computer's motherboard serve as a powerful reminder of the potential for positive change in our urban environments. I look forward to witnessing the evolution of transit-oriented developments that offer sustainable, accessible, and vibrant places for people to live, work, play and prosper. To further these goals, please refer to the enclosed motion and appendices.

Sincerely

Jim Jones
Markham Regional Councillor
Chairman, Markham Development Services

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NOTICE OF MOTION: **REIMAGINE THE STOUFFVILLE GO TRANSIT CORRIDOR LINE "DEVELOPING AFFORDABLE TOD COMMUNITIES"**

MOVED BY: **REGIONAL COUNCILLOR JIM JONES**

SECONDED BY: **COUNCILLOR KEITH IRISH**

WHEREAS, There is a need to reimagine the Stouffville GO Transit Corridor Line into a subway style, driverless with automatic train control service and land use plans as well as to create the high-speed 407 Crosstown Transitway Corridor, coordinated at a supra-regional level with all affected municipalities within the 416 and 905 area code, spearheading a major transformation of the Stouffville GO Transit line to unlock economic opportunity, job generation, increase ridership and optimize investments in rail transit infrastructure, create complete, walkable communities, provide for a range of housing choices and affordability levels and create unique destinations surrounding each Transit Oriented Development (TOD) station areas (refer to Appendices: for background material and detail); and

WHEREAS, A holistic, comprehensive plan would produce a far more efficient and effective two-way all-day corridor of destinations surrounding GO "Transit-Oriented Development" Stations coupled with 24-hour land uses that focus on the public realm and community amenities to create a vibrant and liveable economic corridor that is not premised on the current commuter model between the 905 and downtown Toronto areas; and

WHEREAS, All GO Commuter Transit Lines, including the Stouffville Line are currently underperforming, low ridership lines that need revitalization into vibrant complete destination TODs with high animation activity, high ridership, multiple amenities, jobs, retail establishments, and concentration of destination facilities; and,

WHEREAS, Planning GO TOD stations at the corridor level allows for the coordination of land use and transportation, which can provide fast, direct, and cost-effective access to more destinations for more people. It also allows for the concentration of higher-density, mixed-use, pedestrian-friendly development within walking distance of frequent transit stops and stations, in tandem with measures to discourage unnecessary driving. This supports sustainable transportation choices and other community goals, resulting in lower levels of vehicle use, reduced greenhouse gas emissions, improved air quality, reduced cost of living, and healthier lifestyles; and

WHEREAS, A joint committee comprised of the Province, Federal Government, Toronto/Markham/Stouffville and York Region are well positioned to work together and implement this comprehensive work and bring all levels of government, agencies and stakeholders together in a joint initiative to reimagine the Stouffville GO Transit Corridor and its surrounding lands across municipal boundaries, and other government jurisdictions; and

WHEREAS, Toronto/Markham/Stouffville Growth Strategy describes the goals, strategies, and actions agreed to by the municipal partnership to pursue sustainable growth and development to 2053 and beyond. It is based on containing growth inside the urban containment boundary, and focusing this growth in Toronto, Markham and Stouffville's Urban Growth Centres, Transit Oriented Development Communities and other areas well-served by frequent transit service. It aims to support sustainable transportation choices with an emphasis on Toronto/Markham/Stouffville land use patterns that promote walking, cycling, and transit; and

WHEREAS, A new transportation plan for Toronto/Markham/Stouffville will setout the goals for a transportation strategy to keep people and our economy moving, strengthen our communities, and protect the environment. It will set out the goals for Toronto/Markham's integrated transportation system and outlines the importance of coordinating land use and transportation to be proactive in using transit to serve and shape land use. MTO (Metrolinx) are called to lead the planning and development of a new GTHA Regional Rail Integrated Transportation Strategy and the Municipalities will lead the planning of the Stouffville Corridor TOD Communities, with a planning horizon of 2053, in coordination with Toronto and Markham's 2053 and beyond Transportation Strategy; and

WHEREAS, Corridor-level planning can attract more economic development opportunities and substantial investment. Developers and businesses are often attracted to corridors with planned transit oriented development, as they see the potential for a larger customer base and improved accessibility. This can lead to more significant economic growth and job opportunities along the entire corridor; and

WHEREAS, Community Connectivity and Planning at the corridor level encourages the creation of pedestrian-friendly pathways, bike lanes, and other non-motorized transportation options that connect various stations and surrounding areas. Corridor planning promotes active transportation and enhances overall livability of the community; and

WHEREAS, Planning and urban design can, at the corridor level, facilitate the establishment of consistent design and development standards across the entire corridor. It can lead to a more cohesive, aesthetic and functional environment, avoiding abrupt transitions between different station areas; and

WHEREAS, Corridor-level planning allows for more effective public engagement will help to reduce nimbyism. Communities can provide input on the overall vision and priorities for the entire corridor, fostering a sense of ownership and involvement in the planning process. Regular open Corridor Committee meetings with stakeholders and ratepayers will help to reduce nimbyism; and

WHEREAS, By planning at the corridor level, environmental impacts and considerations can be assessed and mitigated on a broader scale. This might include evaluating the overall ecological footprint, preserving and increasing green spaces, and implementing sustainable practices that benefit the entire corridor; and.

WHEREAS, in order to speed up the planning process, and use financial resources more efficiently for everyone, it is important that public lands, infrastructure and buildings serve multi-purpose uses where appropriate:

1. Tank storm ponds located in TOD Communities and put parkland or sports bubble on top,
2. Streams and watercourses in TODs Communities can be covered and put parkland on top,
3. Sports fields, parkland and playgrounds be shared between schools and the municipality,
4. Co-locate public and separate schools and municipal facilities in the same multi-level building including separate and public school libraries incorporated into a municipal public library,
5. Do not tax condo and office building underground parking in TOD Communities and transit corridors,
6. Government and Municipal assets should serve multi-purposes because of the cost of land,
7. The Ontario Government should allow the straddling of rail lines to create strata indoor or outdoor parks or urban vertical farming facilities,
8. Within approx. 500 meters of TOD Community GO Stations, buildings should be allowed up to 8.0+ FSI etc.
9. Corridors and Major Streets within a Heritage TOD Community should have minimum heights of 6 storeys. Buildings will be permitted to extend to 8 storeys with a 3 metre step back. Building materials and architecture should be reflective of the existing heritage character,
10. Reduce GO Transit Station Platforms to 82.5 or 103.0 meters long instead of today's 300 meters long platforms,
11. Add more stations to reduce the distance between stations when justified,
12. Increase the frequency when ridership is justified,
13. Build buildings or parkland over the top of GO Stations and GO Platforms,
14. Transform the Stouffville GO Line to an Light Rail Transit Line powered by hydrogen fuel which can coexist with UP Express diesel fuel - instead of the need to electrify the Stouffville GO Transit Line
15. Connect the Union Station Pearson Express to the Stouffville GO Transit Line up to Lincolnville,
16. Conduct a proof of concept pilot for hydrogen trains instead of electric on the Stouffville GO Transit Line,
17. Develop an integrated corridor with condos, retail, office, jobs, institutions, and destination attractions at each TOC station on the Stouffville GO corridor to grow ridership, jobs, residential and economic activity,
18. 10% of all new condo units built are affordable or purpose build rentals in the Stouffville GO TOC corridor,
19. With the provincial and federal governments, conduct pilot projects in urban vertical farming, autonomous vehicles in a geo-fenced environment and waste to energy. If successful, this would be a model for all TOCs.
20. Plan for A MAJOR SPORTS, ENTERTAINMENT AND CONVENTION CENTRE DESTINATION AT THE MARKHAM CENTRE GO STATION HUB.

THEREFORE, BE IT RESOLVED.

1. **That the Province of Ontario and the appropriate municipalities** form an inter-governmental, inter-municipal, stakeholders and agency steering committee and working group to undertake a comprehensive study, followed by development of a plan that will unlock the land use, economic and transit opportunity of the Stouffville GO Transit Line Corridor and its surrounding lands; and
2. **That a Steering Committee made up of representatives from the Federal, Provincial and Municipal Governments and a Government Technical Working Group** be supported by various experts, including urban planners, urban design architects, engineers, economists, environmental specialists, and community stakeholders. Collaboration between government agencies, transit authorities, and private entities would be essential to successfully realize the transformation of the Stouffville GO transit line Corridor and the evolution of Transit-Oriented Developments; and
3. **That the Following Key Steps should be Considered to Guide the Study**:
   a. Define the Scope and Objectives
   b. Assess existing Infrastructure and Demand
   c. Identify Potential Transit Oriented Development Communities Stations
   d. Conduct Stouffville GO Transit Corridor Feasibility Study
   e. Develop Transit Oriented Development Communities Concepts
   f. Analyze Cost and Funding Options
   g. Public Engagement and Consultation
   h. Develop an Implementation Plan
   i. Monitor and Evaluate
   j. Plan a major GTA Sports, Entertainment and Convention Facilities at the Unionville GO/407 Transitway Hub
4. **That the Following Matters be Considered as Part of the Study and Plan** (refer to Appendices for details):
   a. Provide land use, typologies and communities that optimize the frequent rail transit investment where communities are seamlessly linked by high frequency public LRT
   b. Provide Complete Destinations (**Retail, Office and Residential build over the TOD stations**) Transit-Oriented Development Stations that are seamlessly linked with 24-hour uses that create two-way all-day traffic between Toronto's Union Station and Stouffville's Lincolnville Station. (**Involve Pension Funds and other Capital Investors)**
   c. Evaluate and implement autonomous vehicles in a geo-fenced environment and micro-mobility connections to support first-mile/last-mile solutions at rail transit station areas
   d. Create a multi-modal corridor of transit supported neighbourhoods (like a string of pearls along the corridor)

e. Create complete communities and heirarchy of destinations, employment centres and amenities within the sub-centres that generate and attract two-way all-day traffic
f. Examine opportunities for renewables, district energy generation, solar, wind and geo-thermal solutions within the Stouffville GO Transit corridor
g. Provide a Range of Housing Choices and Affordability
h. Balance City-Wide and Regional Goals with the Existing Communities and Its Context
i. Ensure Job Space and Diversity through a Comprehensive Job Creation Strategy
j. Create digital twins of the affected municipalities that utilize the internet of things to monitor utilities and the transportation grid in real time and improve analysis, projection and development review

5. That the Following Programmes be Considered to Reimagine the Stouffville GO Transit line as a Comprehensive Transit Corridor with integrated urban development and sustainable features:

A. Conduct a Technical and Financial Feasibility Study to assess the technical, financial, and operational viability of the proposed transformation of the Stouffville GO transit line to LRT (Subway) type Service:

- ***i. Transportation Demand Analysis:*** Analyze the current and projected transportation demand along the corridor, considering population growth, employment distribution and other demographic factors.
- ***ii. Infrastructure and Engineering Study:*** Conduct engineering study to determine whether to tunnel, or elevate, or grade separate, and other infrastructure upgrades along the corridor.
- ***iii. Environmental Impact Assessment***: Evaluate potential environmental impacts of transit line upgrades, new stations, increased urban development, density, and develop strategies to mitigate any negative effects.
- ***iv. Driverless Train with Automation Train Control Technology Study***: Explore the technical requirements, costs and benefits of implementing driverless LRT technology, and automatic train control.

B. Engage A World-Class Transit Oriented Development (TOD) Planning Consultant Team to masterplan the entire Stouffville GO corridor and every TOD Station, including but not limited to:

- ***i. Station Area Master Plans***: Develop station master plans for proposed TODs. These plans should include mixed-use development concepts, urban design guidelines, land use strategies, and strategies for creating complete destination stations. Consider factors like job distribution, housing density, retail, entertainment facilities, creating great public realm, green spaces, and building on top of TOD stations.
- ***ii. Land Use and Zoning Studies***: Work with local municipalities to update zoning regulations and land use policies that encourage mixed-use development and don't encourage single-family houses and townhouses in TODs.
- ***iii. Transit-Oriented Development (TOD) Strategy***: Establish design guidelines to ensure aesthetic coherence, functionality, and sustainability in the development of stations and surrounding areas. These guidelines would encompass building heights, aesthetics, green spaces, and public amenities.
- ***iv. Indoor Urban Vertical Farming Warehouse Feasibility***: Assess the feasibility of integrating urban vertical farming facilities at each station, considering factors such as space, technology, and economic viability.
- **v. Conduct an Autonomous Vehicles Proof of Concept:** At a TOD station in a geofenced campus environment.
- ***vi. Conduct an Waste-to-Energy Infrastructure Proof of Concept Study***: Assess the possibility of central waste-to-energy facilities at each major TOD station area to manage waste sustainably and produce energy. Evaluate technology options, environmental impacts, financial viability and regulatory considerations.
- ***vii. 3D Modelling Solutions***: Create 3D digital twins and printed models for each TOD station area.
- ***viii. Economic and Job Analysis***: Assess the potential for job creation along the transit corridor. Identify sectors that could thrive in proximity to transit stations, such as technology hubs, commercial centres, and research institutions. This study must consider how to attract businesses to establish their presence at each station.
- ***ix. Housing Market Analysis***: Understand the housing market dynamics in the GTA, including housing affordability issues. Explore different housing typologies, such as mid-rise and high-rise condos, to accommodate the projected population growth and demand for housing. Examine strategies to ensure housing affordability while maintaining the desired urban density.
- ***x. Modular Prefabrication Condominium Construction Feasibility* Study:** The feasibility of using modular prefabricated construction methods for the creation of mid-rise buildings at each transit station and corridor..
- ***xi. Legal and Regulatory Framework*:** Review existing legal and regulatory frameworks and identify any necessary changes to support the proposed transformation of the transit line and TOD station areas.
- ***xii. Conduct visual preference surveys and studies for each TOD***: Solicit feedback in urban planning, architecture, and design to gather public opinions about the visual qualities of different environments, landscapes, buildings, and urban elements.
- ***xiii. Eliminate NIMBYism: Community Engagement, Stakeholder Involvement and Visual Preference Survey***: Conduct public engagement sessions to involve residents in the planning process. Utilize visual preference surveys to gather input on design elements, community preferences, and potential concerns. This can help address potential "NIMBYism" (Not in My Backyard) reactions, avoid creating gentrification and ensure community buy-in.
- ***xiv. Heritage Districts:*** Develop a policy on single-storey buildings near rail transit stations or in heritage districts, the policies are to encourage denser developments in these areas to accommodate more residents and preserve the character of heritage districts.
- ***xv. Plan Major Destinations***: Strategically plan major destinations along the Stouffville GO Corridor as part of an integrated transit network.
- ***xvi. Seek Guidance from the Premier, Minister's of Sports and Economic Development and the Canadian Sports Institute of Ontario (CSIO)***, on how a major Sports, Entertainment & Convention Centre can be part of the economic strategy for the integrated GTA rail transit network. **(A community that works together, plays together and lives together, stays together)**

xvii. ***Financial and Funding Strategy***: Develop a funding strategy that considers public and private funding sources, potential revenue streams from commercial development, and long-term financial sustainability.

xviii. ***Public-Private Partnerships (PPPs):*** Investigate the potential for public-private partnerships to help finance, develop, and operate the new TOD corridor and station areas.

xix. **Implementation Plan:** Develop a phased implementation plan that outlines the timeline, milestones, and responsibilities for each stage of the transit corridor transformation.

C. Establish a Stouffville GO TOD Corridor Stakeholder and Ratepayer Committee to ensure integrated Transit Corridor TOD Planning:

i. This is essential for creating efficient, safe, and sustainable transportation systems that serve the needs of the communities and the GTHA.

ii. The Tri-Government Political Steering committee adopts a multidisciplinary approach that considers various factors including transportation, land use, urban design, economic development, job creation, and community engagement.

iii. Conduct regular transparent committee meetings both in person and hybrid.

Conclusion: Conducting a masterplan study for the Stouffville GO Transit corridor is crucial to meet the growing transportation needs of the 1.5 million people it serves and the millions more expected to make the GTHA their home. By learning from successful transit systems, optimizing capacity, and exploring cost-effective solutions, we can enhance the efficiency, capacity, and overall performance of the corridor. This study will provide valuable insights and recommendations for future infrastructure upgrades, operational improvements, and station design modifications.

That the printing costs associated with the document entitled "Creating a Complete Destination Transit Oriented Development Interactive Corridor Economy" be funded from a City account to an upset limit of $15,000.

6. That This Resolution be Provided to the Following:

- The Right Honourable Justin Trudeau, Prime Minister of Canada
- Hon. Chrystia Freeland, Deputy Prime Minister and Minister of Finance
- Hon. Dominic LeBlanc, Minister of Public Safety, Democratic Institutions, and Intergovernmental Affairs
- Hon. Lawrence MacAulay, Minister of Agriculture and Agri-Food
- Hon. Francois-Philippe Champagne, Minister of Innovation, Science, and Industry
- Hon. Sean Fraser, Minister of Housing, Infrastructure and Communities
- Hon. Mary Ng, Export Promotion, International Trade and Economic Development
- Hon. Steven Guilbeault, Minister of Environment and Climate Change
- Hon. Pablo Rodriguez, Minister of Transport and Quebec Lieutenant
- Hon. Soraya Martinez Ferrada, Minister of Tourism and Minister responsible for the Economic Development Agency of Canada for the Regions of Quebec
- Hon. Carla Qualtrough, Minister of Sport and Physical Activity
- Hon. Kamal Khera, Minister of Diversity, Inclusion and Persons with Disabilities
- Hon. Filomena Tassi, Minister responsible for Federal Economic Development Agency for Southern ON
- Hon. Rechie Valdez, Minister of Small Business
- Hon. Doug Ford, Premier of Ontario
- Hon. Paul Calandra, Minister of Municipal Affairs and Housing
- Hon. Kinga Surma, Minister of Infrastructure
- Hon. Prabmeet Sarkaria, Minister of Transportation
- Hon. Vic Fedeli, Minister of Economic Development, Job Creation and Trade
- Hon. Peter Bethlenfalvy, Minister of Finance
- Hon. Lisa Thompson, Minister of Agriculture, Food and Rural Affairs
- Hon. Todd Smith, Minister of Energy
- Hon. Neil Lumsden, Minister of Tourism, Culture and Sport
- Phil Verster, President and Chief Executive Officer, Metrolinx
- Donald Wright, Chair of the Board of Directors, Metrolinx
- Michael Lindsay, President and Chief Executive Officer, Infrastructure Ontario
- Marit Stiles, Leader of the New Democratic Party of Ontario
- John Fraser, Interim Leader of the Liberal Party of Ontario
- Brian Bentz, President and CEO, Alectra Utilities
- Brian MacPherson, Executive Director, 2030 Commonwealth Games
- Debbie Low, President & CEO, Canadian Sports Institute of Ontario
- York Region Councillors
- Mayor and Councillors, Markham, Richmond Hill, Vaughan, Whitchurch Stouffville
- Mayor and Councillors, City of Toronto
- CEOs and Commissioners of Planning, York Region, Markham, Richmond Hill, Vaughan
- City Clerks – Markham, Richmond Hill, Vaughan, Durham, Brampton, Mississauga, Toronto
- Local York Region MPPs and MPs
- A Better GTA – An Alliance of GTA Resident and Ratepayers Groups in the GTA
- Media - CBC, CTV, City News, Toronto Star, Globe & Mail, York Region.com

GROW TALL OR ORGANIZED INFILL BUT NOT SPRAWL

REIMAGINING THE STOUFFVILLE GO COMMUTOR LINE TO A COMPLETE DESTINATION TOD LRT CORRIDOR

"CREATING THE NEW CORRIDOR ECONOMY WHERE EVERY STATION IS A COMPLETE DESTINATION TOD"

APPENDIX 1

Notice of Motion: Grow Tall or Organized Infill But Not Sprawl
Moved by: Regional Councillor Jim Jones
Seconded by: Councillor Keith Irish

GROW TALL OR PLANNED INFILL BUT NOT SPRAWL

REIMAGINING THE STOUFFVILLE GO TRANSIT CORRIDOR LINE

In the realm of transportation, innovation and progress go hand in hand. The Metrolinx Stouffville GO diesel transit corridor line, along with its predominantly parking lot-based GO station areas, stands at a crossroads where transformation is not only desirable but essential.

To address the growing demands for sustainable, efficient, and technologically advanced transit systems, it is imperative to migrate from the existing diesel heavy rail train line to an electric, driverless, with automatic train control Light Rail Transit (LRT) system. Simultaneously, transforming the station areas into complete destination Transit Oriented Development (TODs) will unlock their full potential, revolutionizing the way people commute, interact, and thrive within their communities.

The current diesel GO train commuter line, while serving its purpose, is burdened by outdated technology and reliance on fossil fuels. The pressing global challenges of climate change and the need to reduce greenhouse gas emissions necessitate a transition to cleaner, more environmentally friendly alternatives. By migrating to an electric LRT system, Metrolinx can significantly diminish its carbon footprint, aligning its operations with the overarching goal of mitigating climate change and ensuring a sustainable future for generations to come.

Furthermore, embracing a driverless train system with automatic train control represents a technology shift in transportation. By eliminating the need for human operators, the system can operate with greater precision, enhanced safety measures, and improved efficiency. This leading-edge technology ensures a seamless and reliable commuting experience, reducing delays and optimizing travel times for passengers. Automatic train control systems, also enhance the overall capacity and frequency of the LRT, accommodating a larger volume of commuters and relieving congestion on the roads.

Beyond the train line itself, the transformation of the station areas into complete destination Transit Oriented Communities holds immense promise. Currently, these areas predominantly consist of parking lots, failing to harness their potential as vibrant transit hubs and transit oriented development. By reimagining these spaces as TODs, municipalities can create livable, walkable neighborhoods where people can live, work, learn and enjoy recreational activities in close proximity to efficient transit options.

As urban centers continue to expand and populations grow, efficient and sustainable transportation systems become paramount in ensuring the smooth functioning of cities. With the aim of enhancing mobility, reducing congestion, and minimizing environmental impact, there is a compelling case to transform from diesel locomotive commuter trains into a comprehensive electric, Light Rail Metro Transit system corridor line.

This transformation involves converting diesel commuter trains to driverless, electric trainsets, equipped with automatic train control, while simultaneously planning all GO station areas as transit oriented development, spatially spaced between stations and with frequent all-day, two-way services for optimal efficiency.

There are many benefits of adopting corridor-level planning approach instead of planning one station at a time. Every station along the Light Rail Transit line should be planned as a complete destination, offering a multitude of amenities and services to cater to the needs of both commuters and the surrounding communities. Every TOD station must be planned to be energy net-zero. Complete destination TODs integrate a range of amenities, including residential complexes, commercial spaces, retail, green areas, and recreational facilities.

Figure 1. **Two GO Transit Series 10 Bi-Level Cars**

This holistic approach fosters a sense of community, encourages active and sustainable transportation choices, and reduces the reliance on private vehicles. The integration of housing, recreational, and employment opportunities within these areas not only enhances convenience for commuters but also generates economic growth, attracting businesses and fostering job creation.

The migration from the Metrolinx Stouffville GO diesel train line to an electric, driverless, with automatic train control LRT METRO system, accompanied by the transformation of station areas into complete destination Transit Oriented Communities, signifies a visionary approach to transportation and urban development. This transformation offers multiple benefits, including reduced carbon emissions, affordable housing options, jobs near where you live, reduce dependency on the automobile, improved safety and efficiency, enhanced commuter experience, and the creation of vibrant, self-sustaining complete destination transit oriented developments.

STOUFFVILLE's CORRIDOR VISION IS "FOCUS ON THE PUBLIC REALM AND ENVIRONMENT"

The Stouffville Corridor Line, and the land uses around it, will play a pivotal role in Markham and Toronto's future. The Stouffville GO Rail Corridor is a key component of a sustainable, livable city of neighbourhoods, connected to convenient, viable transportation alternatives. The Stouffville Corridor will be well planned, and will meets residents' needs with places to live, work, shop, play, entertain, and feel part of a community. Rapid transit is a catalyst for significant change in Stouffville, Markham, Scarborough, Toronto and York Region.

VANCOUVER 2010 WINTER OLYMPICS

The Vancouver's 2010 Winter Olympics showed Canadians what was possible – as people chose public transit. The Canada Line saw weekday service increase by 118%, from 105,000 to 228,000 boardings a day, using two car trainsets (one level), resulting in approximately 3.9 million boardings overall during that two-week period. The Cambie Corridor plan is building on the 2010 Winter Olympic success, linking land use, built form, transportation infrastructure, district energy, affordable housing, solar, geo-thermal, and other elements of sustainability to make the distinct neighbourhoods along Cambie Street an even better place to live. All Canada Line's Transit Station areas were planned as complete destination TOD neighbourhoods.

PLANNING JOB SPACES IN TODs ALONG THE STOUFFVILLE CORRIDOR LINE

The Stouffville Corridor Plan will provide for a variety of opportunities to live, work, shop, play, entertain, and learn, supporting rich social interactions and the inclusion of all residents in community life. In doing so, the Stouffville Corridor will integrate a strategically denser mix of housing and employment space with transit, low carbon energy sources and key amenities such as shopping, local gathering places, improved parks, community facilities and civic spaces. Job spaces will focus strategically in neighbourhood centres, existing shopping areas, and areas in close proximity to TOD GO Transit stations.

The Plan recognizes the distinct character and context of the Corridor's neighbourhoods, while building on the unifying elements of the Stouffville Corridor Line and Markham Centre/407 Transitway Super Hub. A high-quality public realm at each TOD neighbourhood station that facilitates walking and biking connections will evolve. Varying land uses, density, building heights, and building forms will reflect the context and character of the neighbourhoods along the Corridor. Mid-rise to high-rise building forms will be emphasized for most of the Corridor, with taller towers at key TOD locations such as 19th Avenue, Elgin Mills, Major MacKenize, Mount Joy, Centennial, Markham Centre, Denison, Steeles, Finch, Kennedy, East Harbour and Distillery District, etc.

Not every station is considered appropriate for high-rise tower building forms. Higher buildings along the arterial streets and strategic sites will sensitively transition into the evolving context of surrounding neighbourhoods.

The Stouffville Corridor's evolution will reflect the City's commitment to social diversity and resiliency by addressing issues such as housing affordability and social inclusion. Continued and enhanced livability and affordability must be fostered in order for us to progress successfully, resiliently, and sustainably.

Estimates of population growth based on the Plan indicate that the population in the study area could increase from the current population of 1,600,000 people to approximately 2,600,000 people by 2063.

NEIGHBOURHOOD CORRIDOR PLANNING TODs – "CREATING A STRING OF PEARLS"

Through the evolution of Markham, and by observing changes in cities throughout the world, Markham has learned many lessons about important elements of city building.

- We know that the integration of higher density land uses with transit and the use of low carbon energy sources has a powerful cumulative effect on our carbon emissions. In fact, we know that this combination of elements is necessary to significantly reduce our emissions and ecological footprints. We know that climate change is real.
- We have learned that compact and complete communities that combine a concentrated, well-designed mix of housing types, job spaces, shopping, local gathering places, community centres, convention centres and major sporting facilities make neighbourhoods more walkable, livable, and sustainable. Such communities enable people of different life stages, income levels and abilities to grow and age in place. A concentrated urban form, where jobs and services are close to housing, also supports a healthier lifestyle. This results:

- We realize when people are able to choose walking, biking, and public transit as alternatives to the automobile through proximity, or "the power of nearness".
- We recognized the need to solve the housing affordability crisis and the need to work with a variety of partners as we strive to be an equitable city that provides housing for all income levels.
- We know living and working close to transit in a pedestrian-friendly, amenity rich environment reduces the need for an automobile, which in turn frees up overall household income.
- We realized that it is critical to attract, foster and retain businesses in order to facilitate sustainable growth in our economy.
- We know offering goods and services that meet human need, at key locations along a complete destination corridor, can help reduce our overall ecological footprint.

TRANSFORM COMMUTOR LINE INTO A COMPLETE DESTINATION TOD LINE

The Canada line has proven successful as a complete destination TOD Integrated Transit Corridor. Vancouver planned every station as a complete destination Transit Oriented Communities station. They planned from the offset at the corridor level. Expansion requirements were built into their long-range forecasting showing anticipation of future needs, requirements and stations. The Stouffville Corridor line gives Toronto, Markham, and Stouffville the opportunity to emulate a great Canadian success story right in Canada's backyard.

The opportunity presents itself now for Toronto, Markham, and Stouffville Councils to set in motion a comprehensive planning exercise that allows us to plan the Stouffville GO Corridor for the next 30 to 40 years. The outcome of these efforts will be that people will have a great place to live, work, learn, play, and raise a family. Across this integrated TOD rail corridor, people will have more choices and options to direct the path of their lives to create more beneficial realities. Across this integrated transit corridor, people will locate their businesses here and thus jobs. People will want to live here because of how well it is planned.

Figure 2. **Bombardier Diesel Locomotive (Heavy Rail) Stouffville** Line - 12 Car Double Decker Trainsets – 18,500 passenger a day
Stouffville GO Transit Line – Diesel Locomotive, 12 double-decker cars
Future Electrification – 25,000 V AC.
Line Length 48km, Platform Length – 300 meters long
Daily Ridership - 18,500 passengers.
Currently 11 stations at 300 metre long and 5 more 300 metre stations have been approved but not built
Peak -15 minutes, non-Peak 60 minutes
Train Capacity – 12 double decker passenger cars
Seating Capacity –1200-1800 passengers per trip –12 double decker cars
Crushed numbers – 3600 passengers per 12 car train
Nearly all Stouffville GO Line Stations are parking lots.
Lincolnville to Union Station – 1 hr and 3 mins – 11 station stops.
Add 5 Stns - Lincolnville to Union Station daily commute - 1hr & 23 mins

Figure 3. **Hyundai Rotem Light Rail Transit – Canada Line**
Two Car Trainsets – 168,000 passengers a day
Canada Line – Electric, Driverless, Automatic Train Control, 2 car trainsets
Line Length – 19km, 16 Stations and 3 more Stations to be added
Platform Length – 11 - 40 metre long, 5 stns-50 meters & 3 more 50m Stns
Daily Ridership – 168,000 passengers going to 235,000 ridership.
Frequency – Peak Hours 2 minutes – non-Peak - 5 minutes
2 Car trainset, seating 88 passenger, crush load capacity 400 passengers
Driverless, automatic train control and powered by 750 V DC
Canada Line Stations – All planned as Complete Destinations TOD stations.
If the Canada Line stations were to be enlarge the 11 40-meter train station platforms would be enlarged to 50 meters, they will be able to add one more passenger car and increase daily ridership to 350,000 passengers at day.

Stouffville Corridor Planning Principles

1. Provide Land Use That Optimizes the Investment in Transit.
2. Provide Complete Destination transit oriented development.
3. Create Walkable and Cycleable Corridors of Neighborhoods Seamlessly Linked to Public Transit.
4. Focus Intensity and Community Activity at Stations and Other Areas with Strategic Opportunities for Sustainability, Renewable Energies, and Public Amenities.
5. Provide A Range of Housing Choices and Affordability.
6. Balance City-Wide and Regional Goals with The Community and Its Context.
7. Ensure Job Space and Diversity.

PRINCIPLE 1

Provide Land Use That Optimizes The Investment In Rail Transit

New developments should significantly assist in optimizing a shift in travel choice to walking, cycling, and taking transit.

Land uses will be primarily supportive of these sustainable modes. Non-supportive land uses will be avoided

Supportive Land Uses Are Those That:
Include high employee and residential densities, recognizing that the highest densities will be focused at stations and other areas with strategic opportunities for sustainability (i.e., large sites and significant district energy opportunities) & decrease with distance from these areas.
Ensure adequate and appropriate job space. Encourage travel time outside of peak periods.
Attract reverse flow traffic. Encourage travel by walking and cycling.

Non-Supportive Land Uses Are Those That:
Are oriented more towards travel by automobile rather than walking, cycling, or taking Transit. Generate high levels of vehicular traffic. Require significant parking.
Provide low-density building forms. Creates an unpleasant environment for pedestrians. Have limited hours of operation.

PRINCIPLE 2

Provide Complete Destination Communities

Provide a land use mix throughout the Corridor that offers a variety of opportunities to work, live, shop, play, and learn. In doing so, consider the context and character of different neighbourhoods throughout the Corridor. The idea of a complete destination communities should be applied around each station as well as throughout the entire Corridor.

The land use mix may be vertically integrated (within a building) or horizontally integrated (within several buildings in close proximity) and located to maximize the synergy between different forms of development in contributing to a complete community.

Where a mix of land uses is not achieved on an individual site, land uses should demonstrate how the development contributes to a complete community and facilitates walking, biking, and strong transit ridership.

Prioritize retail and other commercial uses at grade within identified neighbourhood centres, existing commercial areas, or areas adjacent to a station. Design such uses to significantly improve walking experiences.

Provide amenities and services, including entertainment, cultural facilities, and services, that support and contribute to a complete community as well as a strong corridor of mobility. In doing so, review, monitor, and consider the impacts of an increasing residential and employment population.

Support rich social interactions and the inclusion of all residents in community life.
Develop spaces in a way that provides adaptability/ flexibility among different uses as the Corridor evolves. Building forms that allow evolution and flexibility around uses are particularly encouraged

PRINCIPLE 3

Create a Walkable and Cycleable Corridor of Neighbourhoods Seamlessly Linked to Public Transit.

Ensure that routes and infrastructure for pedestrians, cyclists, and persons with disabilities are safe, attractive, convenient, navigable, barrier-free, and accessible to transit.

Provide convenient and attractive cycling infrastructure including ample bicycle parking for all ages along the Corridor.

Require active, engaging, people-oriented building scales and uses at grade along the street edges that will enhance the walking experience by framing/defining the pedestrian space, providing visual and architectural interest, and foster vitality and security by providing "eyes on the street" and "street theatre".

Implement strategies that prioritize walking, cycling, and transit trips over automobile trips.
Implement strategic parking reductions within developments, providing relatively higher reductions as proximity to the station increases.
Provide a variety of attractive, convenient, and connected routes for pedestrians and cyclists.
Provide a quality public realm to enhance the travel experience by all sustainable modes to the stations.
Provide weather protection and pedestrian-scaled amenities to facilitate walking.

PRINCIPLE 4

Focus Intensity, Mix And Community Activity at Stations and Other Areas With Strategic Opportunities for Sustainability, Renewable Energy and Public Amenity

Locate higher densities and a mix of uses as close to the rail station as possible. In doing so, consider not only the location of future stations in the Corridor, but strategic

locations that can achieve renewable energy gains and provide significant public amenities.

Consider creative and sensitive transitions in scale between developments around each transit station and the adjacent neighbourhoods.

Achieve a coordinated, quality public realm to help define the station area's "sense of place" and enhance the perception of safety by providing "eyes on the street" in the form of visual surveillance on all parts of the public realm. Where practical, incorporate place-making elements into public spaces around stations to connect all stations while making each distinct.

Ensure new developments contribute to enhancing each station area as a unique place by respecting the context of the neighbourhood and encouraging buildings and spaces to be memorable and locally authentic.

Ensure the station is easy to locate by providing wayfinding measures and orienting buildings and development towards the station.

Create a focus for the broader community; the station area should provide a destination for both transit users and local resident

PRINCIPLE 5

Provide a Range of Housing Choices and Affordability.

Provide a variety of housing forms, tenures, unit types and sizes throughout the Corridor that can evolve to support different uses and configurations and provide for diversity and resiliency.

Recognize and consider the value of existing affordable housing sTODk and low-income housing to meet the needs of low- and modest-income households, including the strategic retention and enhancement of purpose-built rental options.

Provide options and mechanisms to allow for a broad range of incomes to live within the Corridor. Examples include rental housing, lock-off units, co-operative housing, and social housing options.

Ensure that objectives for affordable housing meet the needs of households on low incomes, seniors, and those with mental illnesses or addictions.

Include family housing and facilities for young families and to attract and retain a diverse workforce.

PRINCIPLE 6

Balance City-Wide and Regional Goals with The Existing Community and Its Context

Take advantage of the opportunity the Corridor provides in contributing to Markham's goal of becoming the greenest city in the world by 2033.
Maximize opportunities to reduce greenhouse gas emissions in particular through density and land use mix. Beyond strategies to optimize walking, cycling, and transit trips, implement other greenhouse gas-reducing strategies including passive design approaches for new and existing development, district energy/heating, geothermal, heat pumps, solar, and urban vertical agriculture and local autonomous Vehicles.

Design and locate densities forms to meet local and regional needs (i.e., locating city- and regional-serving uses adjacent to better transit-connected areas) with design approaches that respect neighbourhood context and character.

That higher density forms and mixing of uses can and should be achieved through a variety of building types, emphasizing mid-rise and high-rise building forms along much of the Corridors.

Work with residents, citizens of all ages, property owners, developers, workers, volunteers, and business owners in planning the Corridor, reflecting local aspirations as well as city-wide and regional goals.

Recognize the uniqueness of the neighbourhoods along the Stouffville Corridor and be open to innovative ideas, alternatives, and opportunities that support the Stouffville's GO Corridor Planning Principles.

Ensure that transit and other non-auto modes of travel have appropriate priority on Highway 7 and other connecting streets, including provision to support the effective and

efficient movement of goods within the Corridor.

PRINCIPLE 7

Ensure Job Spaces and Diversity

Recognize the special opportunity that the Corridor represents in providing job spaces in transit-supportive locations. Encourage high levels of employment density within the Corridor. In doing so, consider the value of existing affordable commercial spaces.

Ensure appropriate levels of office, entertainment, creative incubators, educational facilities, and retail space within mixed use developments. Developments in close proximity to stations should provide higher proportions of office and other higher ridership uses.
Avoid displacement or destabilization of existing city serving land uses including industrial and employment areas.

■ PLAN DESTINATION CORRIDOR LINE

GROW TALL, PLANNED INFILL, BUT NOT SPRAWL

Involves considering various factors such as transportation modes, land use, infrastructure, environmental impact, public realm, population growth, and community needs. The process typically consists of several stages, including feasibility studies, data collection, analysis, stakeholder engagement, and decision-making:

Define the Corridor:
Identify the specific corridor where the destination line will be established. Define start and end points, considering existing transportation hubs, activity centers, and population density.

Addressing Transit Demand:
The current Stouffville GO Line ridership is 18,500 passengers per day and planning to increase significantly by 2063. To accommodate the planned growth and alleviate congestion on roads, a robust transit system is necessary. A complete destination corridor TOD line would provide efficient, reliable, and convenient transportation options, encouraging more people to use public transit instead of private vehicles.

Conduct Feasibility Studies:
Evaluate the technical, economic, and operational feasibility of implementing the complete destination corridor line.
Assess the existing transportation infrastructure, including roads, railways, and other modes of transport.
Study the potential demand for the destination line, considering population, employment, and activity patterns.

Collect Data and Perform Analysis:
Gather relevant data on population, demographics, land use, and transportation patterns within the corridor.
Analyze existing transportation networks and infrastructure capacities to identify potential bottlenecks and areas requiring improvement.
Conduct travel demand modeling and forecasting to estimate future passenger volumes and travel patterns.

Economic Development:
By increasing transit ridership, the Stouffville corridor TODs can attract more businesses, residents, and investments. The addition of 400,000 jobs and 400,000 condo units would stimulate economic growth, create employment opportunities, and enhance the livability of the corridor.
A well-connected transit system would also improve accessibility to job centers, educational institutions, healthcare facilities, and other essential services.

Sustainable Development:
Building a complete destination TOD corridor line offers an opportunity to implement sustainable practices and reduce carbon emissions. Designing all TODs as net-zero in carbon emissions aligns with environmental goals and supports efforts to combat climate change. By promoting public transit usage and reducing reliance on private vehicles, the transportation sector's carbon footprint can be significantly reduced.

Improved Quality of Life:
A comprehensive transit system enhances the overall quality of life for residents. It reduces travel times, congestion, and the stress associated with commuting. Convenient access to public transit encourages physical activity, reduces air pollution, and improves air quality. Moreover, the presence of TODs with mixed-use developments promotes walkability, encourages community interaction, and fosters a vibrant and inclusive urban environment.

Technological Innovation:
Researching and planning for a complete TOD corridor line presents opportunities to explore and implement innovative solutions. Proof of concept pilots for autonomous vehicles, indoor urban vertical farming, and centralized vacuum garbage collection systems can enhance sustainability, efficiency, and livability within the corridor. These initiatives can serve as models for other regions, contributing to technological advancements and attracting investment in the area.

Capacity Expansion:
Growing the Stouffville GO corridor line economy by 20 times its existing capacity would accommodate the anticipated population and economic growth in the region. A complete TOD corridor line would provide the necessary infrastructure to support increased transit demand, ensuring efficient and reliable.

Identify Transportation Modes:
Evaluate different transportation modes suitable for the corridor, such as light rail, bus rapid transit, or a combination of modes. Consider factors like capacity, speed, cost, environmental impact, station spacing, and community preferences.
Integrate chosen mode(s) with existing transportation systems and future expansion possibilities.

Land Use and Zoning:
Analyze the existing land use patterns and zoning regulations along the corridor.
Evaluate the compatibility of land use with the proposed destination line and identify opportunities for transit oriented development (TOD) around stations. Consider the potential impact on residential, commercial, and industrial activities within corridor.

Environmental Impact Assessment:
Conduct an environmental impact assessment to evaluate the potential effects of the complete destination line on the natural and built environment.
Assess impacts on air and noise pollution, biodiversity, water resources, and cultural heritage.
Identify mitigation measures to minimize negative environmental effects and enhance sustainability.

Stakeholder Engagement:
- Engage with stakeholders, including local communities, businesses, government agencies, and transit authorities.
- Conduct public consultations, workshops, and meetings to gather feedback, address concerns, and incorporate community preferences into the planning process.
- Build partnerships with stakeholders to ensure collaborative decision-making and successful implementation.

Develop a Comprehensive Plan:
- Based on research and analysis conducted, develop a comprehensive plan for complete corridor destination line.
- Define the alignment, station locations, and service frequency.
- Determine the estimated project cost, funding

sources, and potential revenue streams.
- Outline a phased implementation strategy, considering construction timelines and operational considerations.

Decision-Making and Approval:
- Present comprehensive plan to relevant decision-making bodies, such as transit authorities, and city councils.
- Seek necessary approvals and permits to move forward with the project.
- Address any concerns or objections raised during the decision-making process.

Implementation and Monitoring:
- Develop a detailed project implementation plan, including procurement, construction, and operational timelines.
- Monitor the construction progress and ensure adherence to quality standards.
- Establish mechanisms for ongoing monitoring and evaluation of the destination line's performance, ridership, and impacts on the corridor.
- Researching and planning for a complete destination TOD corridor line is justified to meet future transportation demands, stimulate economic growth, promote sustainability, improve quality of life, foster technological innovation, and enhance the overall capacity of the Stouffville corridor.

■ WHO IS RESPONSIBLE TO OBTAIN THE DAILY TRANSIT RIDERSHIP GOALS, MUNICIPALITIES OR METROLINX?

The responsibility for obtaining daily ridership numbers and setting target figures lies primarily with Metrolinx, the regional transportation agency responsible for planning, building, and operating transit systems in the Greater Toronto and Hamilton Area (GTHA), including the Stouffville GO Transit Commuter Line.

Metrolinx is responsible for collecting and analyzing ridership data across their entire transit network, which includes the Stouffville GO Commuter line. They track passenger volumes, conduct surveys, and employ various methods to estimate ridership levels on a regular basis. This data helps inform decision-making processes, service planning, and infrastructure investments. If Metrolinx set the targets, they are responsible to make sure the infrastructure can handle the growth.

While Whitchurch Stouffville, Markham and Toronto have the responsibility to plan the TODs and obtaining the Stouffville GO Transit ridership numbers for their local areas or advocating for specific targets, the primary responsibility for gathering and setting these goals are the Province and the Municipalities together. They have the necessary resources, expertise, and authority to conduct comprehensive ridership studies and establish targets that align with broader transportation and transit planning objectives in the region.

■ LONG-RANGE VISIONARY PLANNING OR SHORT-TERM JUST-IN-TIME PLANNING

TWO CONTRASTING APPROACHES TO STRATEGIC PLANNING AND DECISION-MAKING

OBJECTIVE: To transform the Stouffville GO Transit Commuter Line into a Light Rail Transit Line with 28 transit oriented development' stations, reducing dependency on personal vehicles and increasing access to public transportation.

LONG-RANGE VISIONARY PLANNING:

Long-range visionary planning involves setting goals and creating strategies that encompass a significant period into the future, typically spanning several years or even decades. It focuses on developing a clear vision of where an organization or individual wants to be in the long term and formulating plans to achieve that vision.

Visionary Thinking:
Long-range planning encourages a broader and more expansive view of the future, aiming to anticipate and shape potential opportunities and challenges.
Strategic Direction:
It helps establish a clear direction and purpose, aligning resources and efforts towards the long-term vision.
Flexibility:
While long-range planning sets long-term objectives, it allows for adjustments and adaptations as circumstances change.
Risk Assessment:
It involves analyzing potential risks and uncertainties associated with long-term goals and designing strategies to mitigate them.
Resource Allocation: Long-range planning requirescareful allocation of resources over an period tosuport the realization the envisioned goals.

SHORT-TERM JUST-IN-TIME PLANNING

Short-term just-in-time planning focuses on making immediate decisions based on current conditions and requirements. It emphasizes agility, adaptability, and responsiveness to rapidly changing circumstances.

Tactical Decision-Making:
It involves making decisions and taking actions based on the immediate needs and constraints of the present situation.
Flexibility:
Just-in-time planning allows for quick adjustments and course corrections in response to emerging opportunities or challenges.
Resource Efficiency:
It aims to optimize resource utilization by avoiding excessive long-term commitments and utilizing resources only as needed.
Rapid Response:
Just-in-time planning enables quick responses to market changes, customer demands, or unexpected events, minimizing disruptions and maximizing opportunities.

Continuous Monitoring:
It requires ongoing monitoring of key indicators and data to make informed decisions and identify areas for improvement.
Organizations often adopt a combination of both long-range visionary planning and short-term just-in-time planning. While long-range planning provides a sense of direction and purpose, short-term planning allows for flexibility and adaptability to seize immediate opportunities or address urgent issues. The balance between these two approaches depends on the nature of the organization, industry dynamics, and the specific goals and challenges at hand.

■ 25,000 VOLTS "ELECTRIFICATION" STRATEGY FOR GO TRANSIT NETWORK

The "electrification" of a railway line refers to the process of powering trains using electricity instead of conventional fossil fuels. The difference between electrifying a railway line at 25,000 volts versus 750 volts DC or 1,500 volts DC lies in the voltage level used for providing electrical power to the trains. Light Rail Transit is normally (750 Volts DC or 1,500 Volts DC).

The voltage level chosen for electrifying a railway line depends on various factors such as the desired speed of trains, track conditions, train weight, length of the corridor line, and infrastructure requirements. Higher voltage systems generally allow for higher speeds and longer distances between power substations, but they require more robust and expensive infrastructure.

DIFFERENCES BETWEEN THE THREE VOLTAGES

750 Volts DC: This voltage level is considered relatively low and is commonly used for urban transit systems, such as subway, light rail, and tram networks. Lower voltage systems are generally suitable for shorter distances. They are often used in urban areas where the power supply infrastructure is readily available or can easily be constructed in shorter intervals such as stations. (Vancouver's Canada Line, Expo Line, Millennium Line which are 750 V–DC)

1,500 Volts DC: This voltage level is also commonly used for larger urban transit systems, including some light rail and subway systems. It provides a bit more power than 750 volts, allowing for longer distances between power substations. Again, 1,500 volts DC is often chosen for urban areas with existing power distribution infrastructure.

25,000 Volts AC: This high voltage level is typically used for high-speed trains, mainline or heavy rail systems. Higher voltage systems like 25,000 AC volts allow transferring higher level of energy to the trains at a lower loss factors and allows longer distances between power substations points, and more efficient distribution of power. However, they require more sophisticated infrastructure, including the overhead catenary wires and substations, which can be costlier to install and maintain compared to lower voltage systems.

The voltage for electrifying a railway line depends on factors like speed, distance, infrastructure availability, and cost considerations. Lower voltage systems like 750 volts DC or 1,500 volts DC are suitable for urban transit systems (LRT), while higher voltage systems like 25,000 volts AC are typically used for mainline or heavy rail applications. The difference between electrifying the Stouffville line at 25,000 volts AC versus 750 volts DC or 1,500 volts DC lies primarily in the power capacity and efficiency of the electrification system.
Power Capacity: Higher voltage systems generally allow for greater power capacity. The 25,000-volt AC system can transmit more electrical power compared to the 750 V-DC or 1,500 V-DC systems. This higher power capacity enables the operation of more trains, heavier trains, or trains with higher acceleration and speed.

Voltage Drop: The higher the voltage, the lower the voltage drop over long distances. When electric power is transmitted over long stretches of track, there can be a loss of voltage due to resistance in the system. Higher voltage systems experience less voltage drop, ensuring that power is delivered more efficiently to trains along the entire length of the line.

Overhead Line Design: High AC voltage systems require a different overhead catenary line design. Higher AC voltage lines need more sophisticated overhead catenary system to insulate the power lines from the infrastructure.

Electrical Safety: Higher voltage systems generally require more stringent safety measures due to the increased risk of electric shock. Special precautions and safety mechanisms need to be in place to ensure the safety of maintenance personnel, passengers, and the general public.

Compatibility: The choice of voltage for electrification also depends on the compatibility with existing rolling stock and electrical systems. If the trains already in use on the Stouffville line are designed for 750 volts or 1,500 volts, it would be easier and more cost-effective to stick with the existing voltage rather than upgrading the entire system to accommodate a higher voltage.

Operation Frequency: GO Transit trains are hauled by locomotives and the passenger vehicles are not self-motorized, while subway or light rail trains are self-motorized. This makes a huge difference in acceleration and deceleration between the two types of trains allowing a much higher frequency at lower headways.

Train and Station Length: The light rail or subway trains, due to their lower headway operation capacity, can be made shorter leading to shorter station platform length (82.5m versus Metrolinx's 300-meter station platforms).

VANCOUVER'S CANADA LINE

Vancouver's Canada Line was planned and built for the 2010 Vancouver Winter Olympic Games. The Canada line has 16 stations which 11 stations are 40-metre-long, and 5 stations are 50-metre-long. Canada Line train sets are two-car trainsets. The Canada lines 2022 daily ridership is 168,000 passengers. Translink ordered 12 more two car train sets so they could reduce the time between trains from 3.0 minutes to 2.0 minutes in peak hours, so it allowed Translink to increase the line capacity from 150,000 passengers daily to 235,000 passengers

daily. Based on the above information provided, here's a breakdown of the current and planned capacity for the Vancouver Canada Line:

Current Situation – Canada Line

- 11 stations have 40-meter-long platforms,
- 5 stations have 50-meter-long platforms.
- Two-car trainsets.
- Electric, Driverless, Automatic Train Control.
- 2023 Daily ridership is 168,000 passengers.
- All Canada Line stations were planned and developed as TODs.

Planned Expansion:

- 12 additional two-car trainsets ordered/delivered - 4th qtr, 2021
- In operation in 4th qtr, 2021.
- 3 additional 50-meter train stations approved to be integrated in existing Canada line corridor.
- Increased capacity to 235,000 passengers per day Reducing train headway from 3 mins to 2 mins in peak hours.

Platform Length:

- The current station configurations include 11 stations with 40-meter platforms and 5 stations with 50-meter platforms.
- If the platform lengths are not adequate, platform extensions may be required to accommodate the longer trains.
- Canada Line has approval to integrate 3 more stations into the existing 19-km corridor.

Train Frequency:

- By adding 12 more two-car train sets, the frequency can potentially increase, reducing the headway between trains down to 2 minutes in peak hours.
- The reduced headway allows for more trains to serve the line, increasing capacity and accommodating more passengers.

Increased Capacity:

- The capacity of the trains is estimated at 334 people per pair of cars (comfortably) or 400 people at crush load.
- Capacity: 12,000 passengers PPHPD.
- Additional 12 2-car trainsets increases the capacity from 150,000 to 235,000 passengers per day.
- The increased capacity considers both the longer trains and the potential increase in train frequency.
- It's important to note that specific details regarding train scheduling and operational changes would need to be considered when implementing the expanded capacity. These details could include adjustments to the timetable, train dispatching, and infrastructure upgrades.

METROLINX'S STOUFFVILLE GO TRANSIT LINE

Stouffville GO Transit line has eleven 300-metre-long train station platforms and five more 300-metre station platforms approved and planned. Stouffville GO Transit trainsets are twelve-car trainsets in peak hours and 6 car trainsets in non-peak hours. The Stouffville GO Transit line has a current daily ridership of 18,500. Basically, all Stouffville GO Transit Stations are parking lots.

GRADE SEPARATION OR TUNNEL OR ELEVATED TRACK?

The choice between tunnelling, grade separation, or elevating the track depends on various factors such as the specific context, urban design goals, road network subdivision design, and cost considerations.

Tunnelling: Tunnelling involves constructing an underground passage for the track, allowing it to pass beneath the ground level. This method is particularly useful in densely populated areas where land availability is limited. Tunnelling can help preserve existing urban fabric and minimize disruption to road networks. However, it is typically the most expensive option due to the complexities of construction and associated infrastructure.

Grade Separation: Grade separation refers to the creation of an overpass or underpass to separate the track from the road network. This method allows trains to pass over or under the roads, eliminating the need for level crossings. Grade separation can improve safety, reduce traffic congestion, and enhance the overall efficiency of the transportation system. It may require acquiring land for the construction of ramps or flyovers, which can have an impact on the surrounding urban design.

Track Elevation: Elevating the track involves raising the railway above the ground level on an elevated structure or viaduct. This method allows the track to pass over existing roads and urban infrastructure without the need for grade crossings. Track elevation can provide flexibility in terms of land use beneath the tracks and minimize the impact on the road network. However, it may have visual and noise implications for the surrounding areas. Urban design and train technology have improved to the point where this is not an issue.

In urban design and road network subdivision design, it is essential to consider the specific requirements of the area, including land availability, existing infrastructure, environmental impact, cost-effectiveness, and community preferences. A comprehensive evaluation of these factors, along with stakeholder engagement and expert input, will help determine the most suitable method for a particular project.

China is the Leader in High-Speed Rail, and they have built thousands of kilometers of elevated track. Cities in China have used the Gantry to build elevated tracks and lift the rail bed in place. China's extensive high-speed rail network is known for its advanced technology, efficiency, and rapid expansion of their rail transit infrastructure..

The Gantry method, also known as the "assembly line" construction method, is commonly used in China for the construction of elevated tracks. This method involves prefabricating sections of the track and lifting them into place using large gantry cranes. It allows for faster construction and minimizes disruption to existing infrastructure and urban areas.

Chinese cities such as Beijing, Shanghai, Guangzhou, and Shenzhen have extensively used the gantry method to elevate tracks and build elevated railway lines. This approach has enabled the efficient construction of elevated rail systems, reduced construction time and costs while minimizing traffic disruptions. It's worth noting

that China's rapid development of high-speed rail and associated infrastructure is a significant achievement, and their experience in using gantries for track elevation has contributed to their success in expanding their rail network.
Montreal used gantry cranes to lift 18 kilometers of rail bed track on to the REM elevated LRT line "Réseau Express Métropolitain" railbed track project. They would have taken only two days to construct the elevated track across Steeles Avenue on the Toronto Markham border. The Steeles Avenue grade separation took 10 months to complete the project. Assuming that we will grow the transit ridership and eventually will need to deliver a two-minute service.

7 Grade Separations in Scarborough/Milliken rail section, which are Havendale Road, Huntingwood Drive, Passmore Ave, McNicol Ave, Steeles Ave, Kennedy Road, Denison Street.

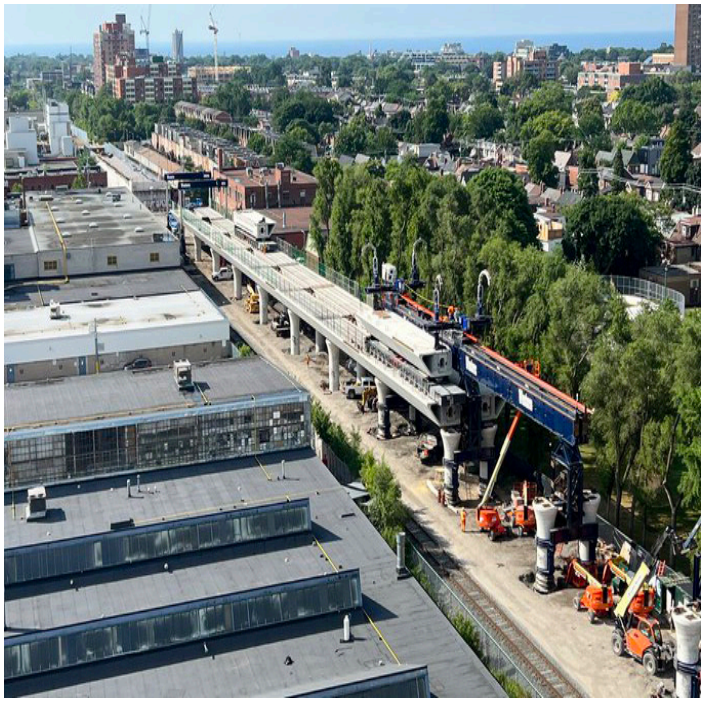
18 Grade Separation in Unionville, Markham and Stouffville sections of the track: which are Highway 7, Eureka Street, Unionville Main Street, Kennedy Road, McGowan Road, Snider Drive, MainStreet Markham, 16th Ave, Bur Oak Ave, Castlemore Ave, Major McKenize Drive, Elgin Mills Road, 9th Line, 19th Ave, Reeves Way Blvd, Hoover Park Drive, Stouffville Main Street, Millard Street, Bethesda Side Rd/Tenth Line. Grade separations are ugly, destroy community connectivity and are more expensive than elevating the track. Elevating the track gives communities greater urban design possibilities and local street connectivity.
It takes just two days to complete the span of 40 metres, versus the traditional method, it would take a month." The grade separation done a Steeles Avenue by Metrolinx took approximately ten months.

Workers were fitting two of the segments together in figure 10. Attached by safety cables, one was standing on a concrete segment that was already in place, while another was on the concrete segment that was hanging in the air, about 10 feet higher. A third worker was standing on the gantry itself as the segment was placed in its spot using wires and winches. This method of building — a first in Quebec — is far faster than the traditional one, which relies on cranes to lift each block individually.

The gantry can hold several concrete pieces at once, and was holding up 10 segments that will make up one span.

"It takes just two days to complete the span of 40 metres, when in the traditional method, it would take a month."

That allows builders to reduce the time they need to close roads, as the project will cut through urban areas. The use of the gantries also improves worker safety, because the amount of time workers spend at heights is reduced.



Constructing Toronto's "Davenport Diamond" Elevated Track

Figure 4. **Pedestrian Path & Urban Lookout in New Elevated Track Designs - East REM2**

Elevating the Track would save approximately $500 million of construction costs versus constructing 25 grade separations in Toronto, Markham and Stouffville on the Stouffville GO Transit Line. Secondly, elevating the track doesn't screw up the urban design opportunties and connectivity of the local road network.

■ DEVELOP A AFFORDABLE HOUSING, JOB CREATION, AND RIDERSHIP STRATEGY

Develop an aggressive game plan to achieve the goals of obtaining a daily ridership of 400,000 on the Stouffville GO LRT Line, building 400,000 condo units at the Corridor's TODs, and develope a strategy to create 400,000 jobs up and down the Stouffville rail corridor by 2063.

Transform the Stouffville GO Commuter Line: From a commuter line into a full-blown TOD, LRT electric, driverless train with automatic train control.

The following steps need to be implemented to achieve the objectives over the next 40-years.

Conduct a Feasibility Study: Begin by conducting a comprehensive feasibility study to assess the viability of the project. This study should include an analysis of ridership projections, creating a TOD corridor where people want to live, market technical feasibility, and financial considerations.
Collaborate with Stakeholders: Engage with relevant stakeholders such as local governments, transit agencies, developers, and community groups to garner support and secure necessary approvals. Consultation and collaboration are crucial for successful implementation.
Enhance Infrastructure: Upgrade the existing Stouffville Line infrastructure to support the increased ridership and transition to electric LRT. This includes improving track systems, signaling, electrification, and station facilities. The objective should be to enable 2-to-3-minute peak hour service, automated train control, and a seamless passenger experience.
Develop Condo Units: Collaborate with developers to plan and build approximately 100,000 condo units over a 10-year period. Conduct a corridor feasibility study and market research to identify suitable locations for development, ensuring convenient access to transit stations. Coordinate authorities to streamline the approval and permitting processes.
Introduce Incentives: Work with developers, governments, and financial institutions to introduce incentives for condo buyers, such as transit-oriented development incentives, affordable housing options, and favorable mortgage rates. This can help attract residents and generate demand for the new condos.
Marketing and Promotion: Implement an extensive marketing and promotion campaign to create awareness about the new LRT system, the convenience of transit-oriented development living, and the benefits of the Stouffville Line. Utilize social media, advertisements, community events, and partnershiVps to reach a wide audience.
Integration with Existing Transit: Ensure seamless integration of the Stouffville Line with existing transit networks, including buses, other GO Transit lines, and local transit systems. Optimize transfer points, implement seamless integrated fare systems, and provide convenient connections to enhance the overall transit experience.
Implement Smart Technologies: Leverage smart technologies, including automatic train control, real-time passenger information systems, mobile apps for ticketing and trip planning, and intelligent infrastructure management systems. These technologies enhance efficiency, safety, and the overall passenger experience.
Continuous Improvement: Monitor ridership, customer feedback, and market trends continuously. Use this data to make informed decisions and implement improvements to meet evolving needs. This may include adjusting service frequencies, introducing new amenities, expanding the LRT network, or enhancing the condo offerings.

Sustainability Considerations:

- Incorporate sustainable practices into the project, such as renewable energy sources, energy-efficient infrastructure, eco-friendly construction materials, and green spaces.
- This can align with the broader goals of reducing the carbon footprint and promoting sustainable urban development. This is a high-level game plan, and each step may require further planning, coordination, and resource allocation.
- It's crucial to engage with experts and professionals in urban planning, transit, and real estate development to tailor the plan to the specific context of the Stouffville Line and its surroundings.

Reimagine Stouffville GO Transit Corridor:

1. **Conduct Feasibility Studies:**
   - Determine if building 400,000 condo units, reaching 400,000 daily passenger boardings and alightings daily, and create of 400,000 jobs are viable along the Stouffville TODs corridor over the next 37 years.. This analysis would involve studying travel patterns, demographics, and potential growth areas along the Stouffville corridor.
   - Consider factors such as market demand, infrastructure costs, land values, employment opportunities, and potential tax revenues. Serve as a blueprint for the transformation of the underperforming Stouffville GO Transit Corridor Line's stations into thriving, sustainable Transit Oriented Development. Assess the technical, economic, and environmental aspects of converting the existing commuter transit into a light rail (METRO) transit line.
   - This study would evaluate the viability of replacing diesel trains with driverless electric trains, implementing automatic train control. Conduct a environmental impact assessment study.
   - This assessment would consider factors such as air quality, noise pollution, energy consumption, and the overall sustainability of the project. It would help

Figure 9. **Reseau Express Metropolitain LRT Station - Montpellier Station**

Figure 7. **Alstom Montreal's REM LRT Interior Car**

Figure 8.**Reseau Express Metropolitain LRT Station**

Figure 5. **Alstom Montreal's Reseau Express Metropolitain**

Figure 6.**Inside REM LRT Station**

Figure 11. **New Elevated Track Designs for Montreal's REM de l'Est Address Concerns - East REM2**

Figure 10. **Gantry Crane - Lifts 50 tons of railbed into place for the REM elevated track on the Montreal LRT Line at a time.**

identify mitigation measures and ensure compliance with relevant environmental regulations.

2. **Develop a Stouffville GO Transit Corridor TOD strategic Plan:** that is holistic, comprehensive, and interactive complete destination TODs station corridor plan. The aim is to create great public realm and places to live, work, play, and entertain, while addressing the challenges of high interest rates, high housing costs, high land costs, high immigration levels, stagnant income levels, technology advancements, workplace automation, and inefficient land use.
3. **The Stouffville GO Transit Corridor is Planned:** as a complete integrated destination TOD corridor, incorporating jobs, 20% affordable housing, retail, entertainment, mid-rise and high-rise condominiums at every TOD station. The TOD development strategy prioritizes walkable urbanism and the creation of great spaces and vibrant public realm.
4. **Transformation of GO Stations**: will contribute to economic growth, job creation, improved transit options, and sustainable urban development. The parking lots land areas will be transformed into mid-rise and high rise condominiums. These stations will benefit the surrounding communities by creating commerce, jobs, sports and recreational facilities, shopping, entertainment, and housing options.
5. **Affordable Housing**: The goal is to ensure that 20% of all condominium units built at all TOD station areas is affordable housing, catering to individuals and families with lower incomes, promoting socio economic, diversity and inclusivity.
6. **Need to address whether we Tunnel, Grade Separate of Elevate the Track:** through the communities. Tunnelling is expensive, grade separations are expensive and divides communities and elevating the track creates the best urban design and local road connectivity solutions.
7. **Conduct a Comprehensive Study at the corridor level:** to assess the potential for redevelopment and engage stakeholders, local communities, transit authorities, government officials, urban planners, and developers to gather input and create a shared vision for each TOD station area.
8. **Transit Oriented Development:** Implement TOD principles at all stations to create mixed-use, pedestrian-friendly environments with a focus on high-density residential condominiums, commerce, jobs, sports and entertainment facilities, shopping centers and create spaces of character and great public realm.
9. **First Mile, Last Mile Solutions**: Develop and integrate efficient first mile and last mile transit options, such as bike-sharing programs, electric shuttles, improved pedestrian infrastructure, and autonomous vehicles operating in a geofenced environment, to provide convenient connectivity from surrounding neighborhoods to the stations and other destinations in the geo-fenced campus area.
10. **Indoor Urban Vertical Farming**: Incorporate indoor urban vertical farming initiatives within each TOD area to promote local food production, enhance food security, reduce dependency on foreign fruits, vegetables, produce, great jobs locally, reduced vehicles miles travelled and carbon footprint.
11. **Central Garbage Collection System:** Implement a centralized waste management system that maximizes efficiency and minimizes environmental impact, including recycling and composting facilities, to serve all the TOD areas.
12. **The Adoption of Modular Prefabrication Condos** Over townhouses in transit oriented development and on major transit corridors.
13. **Stormwater Management**: Tank existing stormwater management ponds and put parkland on top, utilizing land efficiently, and creates attractive green spaces. Utilize sustainable design practices such as green roofs, permeable pavements, and rainwater harvesting to manage stormwater runoff effectively.
14. **Multi-Level Schools**: Co-locate separate and public schools that are multi-level within each TOD area, providing education opportunities for all age groups, optimizing land use, and creating vibrant learning environments.
15. **Municipal Community Centers and Libraries:** Co-locate and share community centers, park land, amenities, and public libraries within each TOD area with the school systems, fostering social interaction, recreation, and access to knowledge for residents.
16. **Separate and Public-School Systems**: Foster collaboration between separate and public-school systems by locating both in the same building, promoting inclusivity, shared resources, and diverse educational experiences.
17. **Public-Private Partnerships**: Encourage public-private partnerships to attract investment, expertise, and innovation for the successful implementation of the transformation plans leveraging the strengths of various stakeholders.
18. **Perform a comprehensive financial and economic analysis** to assess the funding mechanisms required for the transformation. This analysis would include evaluating the costs of infrastructure upgrades, train technology implementation, and the development of affordable housing units. It would also consider potential revenue sources such as fare collection, public-private partnerships, and government funding.
19. **Engage A World-Class TOD Economic Planning Consultant Team** to masterplan the entire Stouffville GO corridor and every TOD Station in the Stouffville corridor.
20. **Define the Complete Destination Station** and determine the specific amenities that should be included. This may involve considering features such as retail spaces, recreational areas, bicycle parking, pedestrian connectivity, and accessibility for people with disabilities. Engaging with the community and gathering input from stakeholders would be crucial during this process.
21. **Develop A Comprehensive Job Creation Strategy** that aligns with the goals of the project. This strategy should include initiatives to attract businesses, support

entrepreneurship, and foster economic development along the transit corridor. Collaboration with local governments, economic development agencies, and industry stakeholders would be vital.

22. **Engage With The Community, local businesses, residents**, **and other stakeholders throughout the planning process**.

- **Conduct public consultations**, gather feedback, address concerns, and incorporate community aspirations into the development of the light rail line and TOD stations. The decision depends on local priorities, community values, and a comprehensive assessment of the options.
- **Transit oriented development** are places that, by their design, allow people to drive less and walk, cycle, and take transit more. This means concentrating higher-density, mixed-use, pedestrian-friendly development within walking distance of frequent transit stops and stations, in tandem with measures to discourage unnecessary driving.
- **Successful transit oriented development** depend on extensive public engagement so that decision-makers understand the needs and desires of existing communities, which are often fearful of the gentrification that often comes with transit development. The involvement of major stakeholders like community-based organizations, local business groups, elected and government officials, private developers, educational institutions and social equity advocates is important for long-term sustainment of the corridor.

TOD Objectives for Corridor Planning and Corresponding Strategies to achieve them.

1. **Guide Growth and Development:** Making stakeholders understand the manner in which transit can influence real estate development around stations, spur smart growth, and reduce traffic congestion is imperative.
2. **Effective Corridor TOD Planning** does not cause market development, but a successful TOD core can encourage growth in other stations. Developers and agencies involved in the planning process must pinpoint potential development sites and link activity centers with transit stations with mixed use development.
3. **Support Regional Economic Growth:** Creating transit options enhances accessibility to jobs and other attractions while reducing commuting time and transportation costs. A recent study by the CTOD also indicates that high skill employers prefer dense, urban locations, since these employees benefit from agglomeration.
4. **Suburban Employers are hard to reach with public transit,** increasing costs for employees and transit agencies. Low income groups face particular disadvantages, as poor accessibility also leads to fewer employment options.
5. **Enhance Regional and Local Equity:** Gentrification and displacement of low income residents is a common outcome of increased growth and demand in TOD corridors. However, maintaining affordable housing in the neighborhood must be a priority to ensure equitable development and benefits for all income groups.
6. **Promote Reinvestment and Increase Spending Power:** Analyzing the current market situation of the corridor and specific station areas can help create an economic revitalization policy. These may include skills development and priority hire for locals, tax incentives to attract firms into the corridor, shared parking provisions, and focus on urban design and placemaking.
7. **Invigorate Stakeholder Engagement and Collaboration:** The involvement of major stakeholders like community based organizations, local business groups, elected and government officials, private developers, educational institutions and social equity advocates is important for long term sustainment of the corridor. Collaboration between planners and community can also help to direct public investment and alleviating concerns of old residents.
8. **Maximize TOD Potential and Benefits:** Creating a TOD Implementation and Investment Plan is advised with involvement of stakeholders to help set of priorities and goals for new station areas and direct public and private investment.

- The City of Vancouver has policies in place to encourage the development of multi-family rental housing across the city, particularly along arterial routes and near transit stations. The Secured Rental Policy (SRP), approved by the Vancouver City Council in 2021, allows for low- and mid-rise rental housing buildings on C-2 commercial districts on arterial streets. These rental housing buildings fronting major roads can reach six storeys, as long as at least 20% of the residential floor area is dedicated for below-market rental housing or 100% social housing.
- In terms of heritage districts, the city has created regulations and companion design guidelines that preserve and protect the historic fabric of Vancouver's main historic areas: Chinatown, Gastown, Shaughnessy, and Yaletown. These regulations ensure that new development in these protected areas is compatible with the area character. The city also provides a range of management tools and incentives to support heritage conservation and ongoing care for Vancouver's heritage.
- So, while there isn't a specific policy on single-storey buildings near rail transit stations or in heritage districts, the city's policies do encourage denser developments in these areas to accommodate more residents and preserve the character of heritage districts.

Transforming A Commuter GO Transit Line to a Full-Service LRT Line like Vancouver's TransLink System

tn #	Station Name	Land (ha)	LVC	Residential GFA (m2)	Number of Condo Units	PPU (2.2)	Distance Between Station (metres)	Jobs	Daily Ridership
01	**Union Station**				**20,000**	**33,000**	**0**	**20,000**	**50,000**
02	Distillery District				4,000	8,800	**1,687.17**	**5,000**	**10,000**
03	East Harbour				8,000	17,600	**2,682.24**	**50,000**	**50,000**
04	Queen Street				3,000	6,600	**3,313.11**	**5,000**	**10,000**
05	**Pape/Danforth Avenue**				**3,000**	**6,600**	**8,280.17**	**5,000**	**10,000**
06	Scarborough (St Clair)				2,000	2,400	**14,098.47**	**1,000**	**10,000**
07	Kennedy Station				5,000	11,000	**15,773.49**	**1,000**	**10,000**
08	Lawrence – Kennedy				10,000	22,000	17,759.08	1,000	10,000
09	Elsmere Road				10,000	22,000	19,617.68	1,000	10,000
10	Progress Ave						**20,081.88**	**1,000**	**10,000**
11	Agincourt-Sheppard				5,000	11,000	**21,679.38**	**5,000**	**10,000**
12	Finch-Kennedy				10,000	22,000	**23,806.68**	**2,500**	**10,000**
13	McNicol				10,000	22,000	**25,076.64**	**2,500**	**10,000**
14	Passmore						**25,808.31**	**2,500**	**10,000**
15	Milliken (Steeles Ave)	Ha- 98.5			20,000	45,000	**26,410.46**	**20,000**	**50,000**
16	Denison Ave (Kennedy)	Ha- 108.0			10,000	22,000	**27,738.71**	**5,000**	**10,000**
17	14th Ave	Ha- 108.0			5,000	11,000	**28,550.70**	**3,000**	**10,000**
18	**Markham Centre**	**Ha- 184.0**			**60,000**	**150,200**	**29,507.32**	**50,000**	**100,000**
19	Highway 7	Ha- 102.0			10,000	22,000	**30,695.13**	**5,000**	**20,000**
20	**Centennial (McCowan)**				20,000	44,000	**50,000.48**	**10,000**	**30,000**
21	**Markham Village**	**Ha- 5.22**			**1,000**	**1,200**	**35,761,93**	**1,000**	**2,500**
22	16th Ave	Ha- 23.40			5,000	11,000	**36,868.16**	**1,000**	5,000
23	**Mount Joy/Greensborough**	**Ha- 44.75**			**15,000**	**32,400**	**37,823.76**	**5,000**	**20,000**
24	Major McKenzie	Ha-533.17			20,000	44,000	**39,022.29**	**5,000**	**33,000**
25	Eglin Mills	Ha-910.62			20,000	44,000	**41,428.50**	**5,000**	**33,000**
26	19th Ave	**Ha-486.00**			20,000	44,000	**43,728,21**	**5,000**	**33,000**
27	**Mainstreet Stouffville**	**Ha- 7.17**			**3,000**	**6,600**	**45,861.91**	**2,000**	**10,000**
28	**Lincolnville**	**Ha– 46.00**			**10,000**	**22,000**	**48,985.50**	**2,000**	**10,000**
	Total				**350,000**			**300,000**	**590,000**

CHART WILL BE FILLED OUT PROPERLY ONCE A DETAILED CORRIDOR PLANNING STUDY IS CONDUCTED.

Planning and Design Issues to be addressed

1. Visual Preference Survey and Study
2. 3D Digital Modelling for all TOD Stations
3. 3D TOD Model Printing
4. Planning TODs - Treat all lands equally and do the right TOD planning
5. Construct Buildings over GO Transit Stations
6. Combine Public/Separate Schools and Municipal Services in same building
7. Tank Storm Ponds and put parkland on top
8. Assimulate Heritage Buildings in TODs and TOD Corridors
9. Retail, Government Services, Sporting Facilities and Entertainment Destinations
10. Waste to Energy Central Garbage Collection System Pilot
11. Urban Vertical Farming Pilots
12. Autonomous Vehicle Pilot in a TOD Geo-Fenced Environment
13. 4-10 Storey Modualr Prefabricated Condominiums in TODs / Corridors
    - 20% Affordable housing
    - Ground floor in corridor are retail and office
    - 1st and second floor could be office
    - Underground Parking for Condo Owners - (1 space per unit)
    - MCAP don't tax underground parking, tax surface parking in TOD Station Areas
    - Develop best TOD Communities by disregarding stakeholder Property Lines

■ SEAMLESSLY INTEGRATE MAJOR TOD DESTINATION STATIONS

- **Existing Stations**
- **Approved Stations**
- **Aspirational Stations**

1. **Lincolnville**
2. **Stouffville Whitchurch Station**
3. 19th Avenue
4. Elgin Mills
5. Major McKenzie GO Station
6. **Mount Joy (Highway 48)**
7. 16th Ave
8. **Mainstreet Markham (Hwy 48)**
9. **Markville Mall (McCowan Rd.)**
10. Highway 7
11. **Markham Center**
12. 14th Ave
13. Denison Ave
14. **Pacific Mall/Markham Village**
15. Passmore Ave
16. McNicol
17. **Finch (Kennedy)**
18. **Agincourt (Sheppard)**
19. Progress (Scarborough Town Centre)
20. **Elesmere Road**
21. **Lawrence Ave**
22. **Kennedy Station, (Bloor-Danforth & Eglinton Subway**
23. **Scarborough (St. Clair)**
24. **Pape-Danforth**
25. Queen Street
26. **East Harbour**
27. Distillery District
28. **Union Station**

■ PLANNING, DESIGN AND GOVERNANCE CONSIDERATIONS

An integrated transit, finance and land development rail model cannot work without active and engaged government at all levels. In particular, several functions need to be creatively lead by government. If both private and public goals are to be achieved, an urban rail and urban regeneration. These are:

- A broader understanding of externalities, especially benefits received by land-owners in excess of what they contributed to new transport infrastructure;
- Land assembly especially after private bids have shown the need for it;
- Accommodative zoning for land use changes, so as not to prohibit re-development;
    - Urban design and building standards
    - Network coherency and integration
    - New assessment tools
    - New institutional arrangements
    - New risk management approaches.

ACTIVE CREATION OF 'PUBLIC GOOD' EXTERNALITIES

Civil society, with investors and developers are the three main components of the project. If any one of these components is not well engaged, the project will not reach its maximum economic potential. Traditional rail developments models generally assume that the 'public good' benefits largely equate with access to public transport.

Civil society needs to be engaged in the co-design of the project, particularly given that new rail projects will change neighborhoods. Generally, communities are concerned about changes at the street level, alterations to the fine grain look and feel of the street, large variations in the socio-demographic mix of the locality and loss of equity.

Uncertainty about these issues is often worked through in NIMBY conflicts over planning-related questions of height, bulk and density, because these are the only areas that traditional planning systems give communities the opportunity to have input into the decision-making process. In this context it is important that the project takes the additional step and involves the community in the design process so it can understand and own the changes in its identity.

Ideally, a project should identify opportunities for enrichment of the community through a better quality public realm, more opportunities for enterprises and a more equitable and just community.

Engaging the community in the code design of the project needs clear sustainability objectives and can bring multiple inputs to the design process. These frameworks ask simple, but profoundly challenging, design performance questions and challenge a project to:

- Make the locality more fun and safer to live in;
- Make the locality greener and softer with less impact on the biosphere;
- Enhance the socio-cultural mix of the community;
- Improve the community self-reliance and mutual support;
- Produce an increase in local economic activity and the number of local jobs and services.

■ TEN PRINCIPLES OF COMMUNITY CO-DESIGN

1. **From Consultation To Co-Design With Civil Society** - Consultation is often, at the best, seeking ratification of or minor modification to previously made engineering and economic decisions. At the worst, it is about providing information about the decisions that have been made.

   This approach often generates NIMBY responses, early and realistic engagement with the community in the design process creates opportunities for multiple benefits for both the community and the project.

2. **Changing the Narrative Space** - An integrated transit, finance and land development project is not only about a new mode of transit or urban infill, it represents a change in a community's identity and narrative about "who we are". Integrated transit, finance and land development projects need to be work with civil society to invent a new story about "what we will be once integrated transit, finance and land development or simply new transit is here", and have clear benefit of the project to the community built into this story.

3. **Lead Times** - evolving a community narrative to include an integrated transit, finance and land development project will usually need long lead times because they may involve a community wide re-conception of urban density, style and human movement slash transit. It is important that the community education and engagement process starts early in the design process.

   Across the life of an integrated transit, finance and land development project these campaigns can be very cost effective. Even a basic NIMBY campaign effectively run at the end of a project can cause major delays and cost overruns

4. **A Design Forum** – Normally, urban developments have some form of communication strategy or consultation group that operates at the implementation phase of a project, where previously made project decisions are explained to the community. A rail integrated transit, finance and land development projects creates a working forum where the community and the developer can work through the major issues created by the project.

5. **70% Right and "Feel"** – Generally, community concerns about developments in urban areas fall into two categories.

   Firstly, questions that relate to bulk and height of the structures. Generally these only have to be 70% right for the community to accept the change;

Secondly, however, issues that relate to the "feel" of the community have to be nearly perfect if a project is to work;

- "Feel" is a complex question that relates to fine grain details in buildings and Street levels;
- The mix of residential, retail commercial and food and beverage outlets; the social and cultural demographics of the community;
- The equity of access to housing and work;
- The availability of recreation and green spaces.

6. **Contect to Structures** – Most planning and architectural projects start from the site and the build, work out an acceptable ROI, then see if any funds are left over to do minor alterations to the contect.

   An integrated transit, finance and land development project should start from the context and work back into the structures.

   This will identify local assets that such projects can leverage at very little expense and identify cost effective interventions that can bring major community benefits.

7. **Social Contract** – An integrated transit, finance and land development projects needs to be seen as a social contract where the benefits from the developments can be articulated and people know how negative impacts will be ameliorated.

   This needs to be enshrined in some form of binding contract with the community with real penalties for non-compliance.

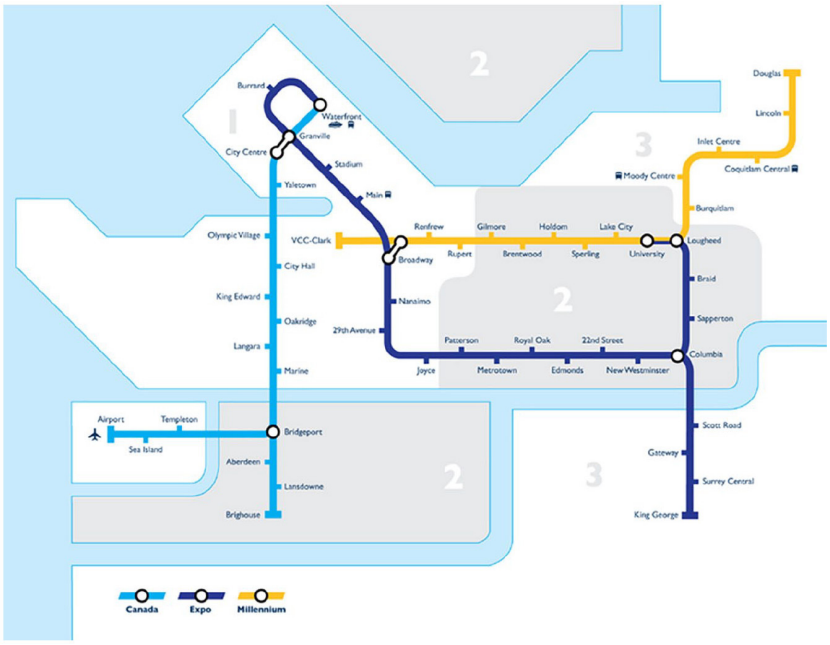
8. **Enterprise and Facility Creation** - People need meaningful work, places to go for education, socializing and cultural spaces. Traditional urban developments focus on creating built spaces then assume that the free market will fill them.

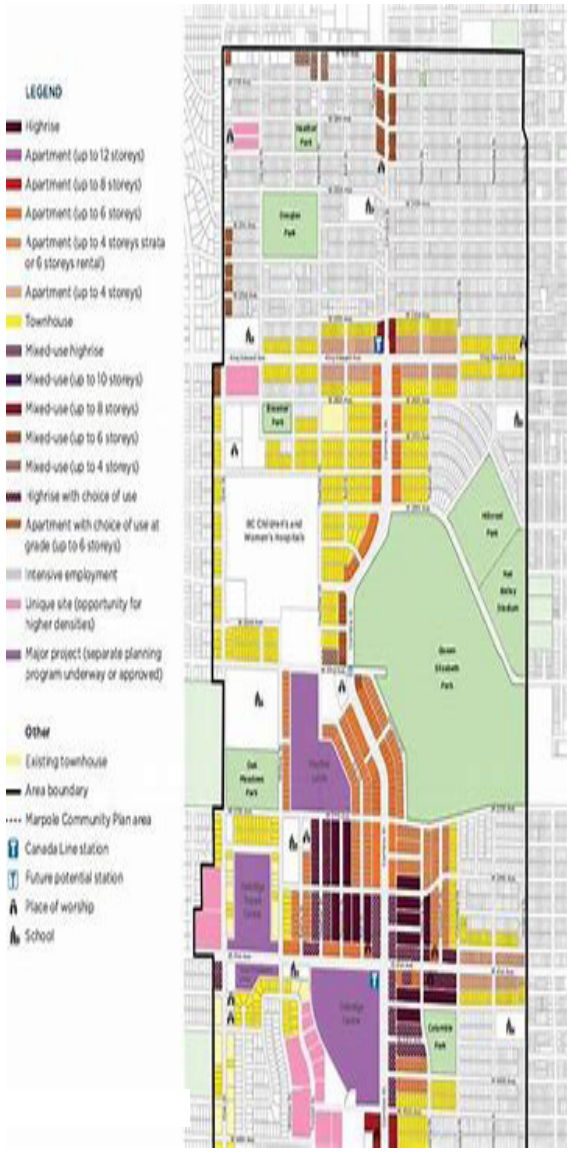
   An integrated transit, finance and land development project should focus on the creation of real enterprises and facilities then turn the attention to the space into which to house them.

9. **Engage in Community Evolution** - Historically, urban renewal projects have been focused on the planning and the build. After this the developments are sold and the community is left to pick up the pieces and try to make it work.

   An integrated transit, finance, and land development project should factor in long term up, to five years, direct involvement in community building and activation.

10. **Outcome KPI's** - Developing an ERM project takes time and it is important to have agreement between the community and the developers about indicators to measure on progress of the development. These should be outcome focused across a number of different themes areas.





Vancouver "CANADA_LINE CAMBIE CORRIDOR PLAN"

No	Stouffville Stations	Distance (m)	Station Spacing	Go Average Speed km/h	Dwell Time GO	GO Time (Sec)	LRT Average Speed km/h	Dwell Time LRT	LRT Time (Sec)
1	Lincolnville	49,205	-	-	60	-	-	60	
2	Stouffville Whitchurch Station	46,010	3,195	45	45	301	60	20	252
3	19th Avenue	43,910	2,100	40	45	535	55	20	409
4	Elgin Mills Road	41,910	2,000	40	45	760	55	20	560
5	Major MacKenize Road GO Station	39,914	1,996	30	45	1,044	50	20	724
6	Mount Joy (Bur Oak)	37,833	2,081	40	45	1,276	55	20	880
7	16th Ave.	36,892	941	25	45	1,457	45	20	975
8	Markham Mainstreet (Highway 48)	35,500	1,392	30	45	1,669	50	20	1,095
9	Markville Mall (McCown Road)	33,000	2,500	40	45	1,939	55	20	1,279
10	Highway 7	30,735	2,265	40	45	2,188	55	20	1,447
11	Markham Centre Stn – Unionville	29,436	1,299	30	45	2,389	50	20	1,561
12	14th Avenue	28,525	911	25	45	2,565	45	20	1,654
13	Denison Avenue	27,764	761	25	45	2,719	45	20	1,735
14	Markham Village (Steeles Avenue)	26,400	1,364	30	45	2,928	50	20	1,853
15	Passmore Avenue	25,450	950	25	45	3,110	45	20	1,949
16	McNicoll Avenue	25,101	950	25	45	3,205	45	20	2,045
17	Finch Ave-Kennedy Road	23,849	1,252	30	45	3,400	50	20	2,155
18	Agincourt – Sheppard Avenue	22,900	949	25	45	3,582	45	20	2,251
19	Progress Ave (Scarborough Town Centre)	20,800	2,100	40	45	3,816	55	20	2,408
20	Elsmere Road	19,663	1,137	30	45	3,998	50	20	2,510
21	Lawrence Ave	17,771	1,892	30	45	4,270	50	20	2,666
22	Kennedy Station	16,400	1,371	30	45	4,479	50	20	2,785
23	Scarborough Station	13,400	3,000	45	45	4,764	60	20	2,985
24	Pape Danforth Avenue	8,400	5,000	45	45	5,209	60	20	3,305
25	Queen Street	5,500	2,900	40	45	5,515	55	20	3,515
26	East Harbour -	2,674	2,826	40	45	5,814	55	20	3,720
27	Distillery District – Cherry Street	1,800	874	25	45	5,985	45	20	3,810
28	Union Station	-	1,800	30	60	6,261	50	60	3,960
Travel Time (minutes)						104			66
Travel Time Difference (minutes)									(38)

Transit Construction Costs, Operation Costs & Citizen's Travel Time Costs

COST OF CONSTRUCTION

- Cost of GO Station Construction - Why Does Metrolinx need 300 meters transit GO stations?
- Build office or Retail Buildings or Condos over top of Transit Stations?
- Tunnel, or Grade Separation or Elevated Track
- Build complete corridors like MTO builds entire 413 Hwy and all enterchanges at same time

COST OF OPERATION - Calculate solutions Costs over 40 years

- Electrical Power - Cost of 750, DC 1,500 DC and 25,000 AC - Install & Operating
- Electric LRT Trains versus Electric Locomotive and same old Double Decker Cars
- Lost Productivity because of selecting wrong train techology and losing jobs to other cities

LOST PRODUCTIVITY - ECONOMY - Ridership (waiting in transit)

- Technology Choice - Waiting on Trains (ride takes longer based on other cities LRTs)
- Station Locations and Spacing
- Waiting at Station - Train Frequency

Feasibility Corridor Level Studies -Determine Condo Units Built, Daily Ridership, Jobs Created

- Who pays for TODs Corridor Destinations Planning Studies?
- Plan, Design & build out the GTHA integrated Rail Transit Network vs building more 400 Hwys

2023 Feasibility Study Goals: **Daily Ridership** - 400,000 **Condo Units Built** - 400,000 **Creating Jobs** - 400,000

Figure 13. **Transit-Oriented Development - "Oakridge Station - Canada Line" -** In Japan, rather than build parking lots around transit stations like we do here, they build Shopping Centers, Housing, Entertainment Centres and office buildings. The transit line creates demand for these buildings, and these buildings create demand.

Figure 12.**Development-Oriented Transit -** Great places need a train less than a train needs a great place. Build the place first and transit becomes the logical, inevitable next step. No more Transit-Oriented Development schemes. What we need is development-oriented transit.

PLANNING A MAJOR TOD DESTINATION IN MILLIKEN MILLS

Conduct an Urban Design Competition and Visual Preference Survey

CREATE A PLACE WHERE PEOPLE WANT TO "LIVE, WORK, PLAY AND VISIT"

APPENDIX 2

Notice of Motion: Reimagining Old Kennedy Road to "MAINSTREET MILLIKEN" (HERITAGE DISTRICT) and Putting the Heart Back into Milliken Mills
Moved by: Regional Councillor Jim Jones
Seconded by: Councillor Keith Irish

MILLIKEN MILLS ASSIMULATED HERITAGE MAIN STREET

■ PUTTING THE HEART BACK INTO MILLIKEN

For the last 35 years, Markham have talked about this land area, conducted many studies, made plans, had landowners and stakeholders participate and cooperate with the city of Markham and we have an unimaginative study coming forward. Let's bring best in class planning to Milliken and give Milliken their own heart and a world class assimilated heritage district that they can be proud of, hold festivals in and attract people from all over the GTA. It is time that we create something special for the Milliken Mills Community.

Planning a Transit-Oriented Development (TOD) station area can bring numerous benefits to both the Milliken Mills Community and the City of Markham as a whole. Car-oriented suburbs have provided many benefits to residents and become major places of employment. The high cost of car dependence has come into clearer focus. This includes long commutes, extreme traffic congestion, air pollution, social exclusion of residents who do not drive, expensive lifecycle infrastructure costs, the paving over of natural habitats for urban uses, ill-health conditions beginning with a decline in physical exercise amongst residents, and traffic related accidents causing serious injury and death.

Transit-oriented developments are one key response to auto dependent cities. Successful transit-oriented developments are characterized by Robert Cervero as encompassing in optimal balance the three Ds – Density, Diversity, and Design. They are dense communities built within a 10-to-15-minute walking radius of rapid transit stations; they have a diversity of mixed land uses that encourages high transit ridership and a busy neighbourhood; and, they have high quality urban design and greenspace to draw people to the public realm. Maybe the ultimate impact of the transit oriented development Act is to clear the way for faster development in which Density dominates at the expense of Diversity of land uses and Design.

REASONS FOR UNDERTAKING A 3D MASTERPLAN VISION FOR MILLIKEN MILLS TOD PLANNING AREAS

1. **Sustainable and Environmentally Friendly**: Transit oriented development promote sustainable transportation options by encouraging residents to use public transit, walking, and cycling. Reducing dependence on cars leads to lower greenhouse gas emissions and helps combat climate change, improving air quality and overall environmental health.
2. **Reduced Traffic Congestion**: By encouraging public transit usage, TOD station areas can alleviate traffic congestion, leading to smoother traffic flow and shorter commute times for residents. This can enhance the overall quality of life in the community.
3. **Access to Essential Amenities:** Planning a TOD station area involves the development of mixed-use spaces, including residential, commercial, and recreational areas. This ensures that residents have easy access to essential amenities like grocery stores, schools, healthcare facilities, and parks, reducing the need for long commutes.
4. **Enhanced Public Spaces**: Transit oriented development emphasize creating attractive and vibrant public spaces, such as parks, piazza, and pedestrian-friendly streets. These spaces promote social interactions, community engagement, and a sense of belonging among residents.
5. **Increased Property Values**: Well-planned TOD station areas often experience an increase in property values due to the high demand for housing in transit-accessible locations. This can result in higher tax revenue for the city, which can be reinvested in public services and infrastructure.
6. **Improved Social Equity**: TOD planning aims to provide affordable housing options near transit hubs, making it easier for low-income residents to access public transportation and essential services. This helps reduce economic disparities and fosters a more inclusive community.
7. **Economic Growth and Job Creation**: Transit oriented development attract businesses, investors, and developers looking to capitalize on the convenient access to a large customer base. This can lead to the creation of job opportunities and economic growth in the area.
8. **Health and Well-Being**: Access to public transportation and walkable neighborhoods encourages physical activity, which is beneficial for residents' health and well-being. Additionally, reducing car usage can lead to lower rates of air pollution-related health issues.
9. **Long-Term Planning and Resilience**: A complete vision for TOD station areas involves long-term planning that considers future population growth, transportation needs, and urban development. This approach enhances the community's resilience to changing circumstances and ensures a sustainable future.
10. **Model for Future Development**: A well-executed Transit-Oriented Community Corridor Masterplan can serve as a model for future urban development projects, inspiring other cities, and regions to adopt similar strategies for creating sustainable, livable, and connected communities.

    Planning a Transit Oriented Development station area involves considering the interplay between TOD Station areas, transit, housing, jobs, commerce, retail, school, health services, recreation, and public spaces to create a holistic and vibrant community. This vision can lead to sustainable, equitable, and resilient urban development that benefits both residents and the broader city.

BY 2050, 70% OF THE WORLD'S POPULATION WILL BE URBAN

In November 15, 2022, the world's population reached 8 billion people. Because of our continually accelerating population growth, we keep hearing that more and more people will end up living in cities (and mega cities) and more people are immigrating to Canada as other countries are experiencing serious environmental climate change.

Cities absorb 90% of the natural resources which are exploited on this planet and are the origin of imbalances in sustainability. It is clear that achieving a sustainable balance depends upon cities becoming more efficient in their environmental management and making citizens aware of their responsibility. We consider whether current planning proposals are coherent with this philosophy. Two fundamental arguments of current existing city.

REIMAGINING OLD KENNEDY ROAD TO "MILLIKEN MAINSTREET HERITAGE DISTRICT."

The concept of Milliken Mainstreet Heritage Districts and heritage preservation is to protect, maintain and create historically significant buildings and areas for their cultural, architectural, and historical value. In many cases, this involves preserving the original structures, which can pose challenges when trying to address modern needs such as affordable housing or transit oriented development.

Assimilated Heritage condominium buildings, surrounding the area while providing affordable housing and taking advantage of the proximity to two GO Train stations, is a solution to address the issue of affordable housing while respecting the heritage context. The approach seeks to blend the old with the new and creating the character of the heritage district while meeting the demands of urban development and housing needs.

Figure 1. **Beacon Hill, Boston**

Figure 2. **Bethesda, Maryland**

Figure 3. **Boylston, Boston**

Figure 4. **Vancouver - Gastown at dusk**

The reimagining Old Kennedy Road Project requires careful planning, collaboration with heritage authorities, and community engagement. It is crucial to strike a balance between the creation of heritage assets and the practicalities of modern urban living. Overall, achieving a balance between assimilated heritage buildings and meeting the demand for affordable housing is a complex task. Successful projects involve collaboration between various stakeholders, careful planning, and a shared vision for the newly created Milliken Mainstreet Heritage District.

CREATE GREAT PUBLIC REALM

The public realm is the link between the 'community', and 'the people' - the place where the benefits of city living can most readily be realized by people. The public realm is the life blood of cities, it is how people truly experience a city. It is where a city's culture is expressed most freely and openly, and it is where the city is at its most democratic, honest, and energetic. When we think about cities we've visited, it is often the streets and the spaces - and the experiences that we have had on them that jump to the forefront of our memories.

I think that reimagining the public realm is how we can most directly influence people's happiness, health, and enjoyment in cities - and make them more attractive places in which to live. Looking for public realm to reimagine in cites, we need not look much further than our streets. Our streets are probably the largest expanse of public realm we have in cities, but they are often hidden in plain sight. By this we mean that through all the cultural, technical, and political innovation we have experienced in cities, city streets have been preserved in aspic for generations.

CREATING GREAT COMPLETE PLACES WITH CHARACTER IS GOOD FOR THE ECONOMY

If we create places where people want to be, then the economy of an area will be improved because it is a lot easier to spend money in a place you go often, than a place you avoid.

A great illustration was research done by Ludo Campbell-Reid, on Fort Street in Auckland, New Zealand. The city took a standard city street, one which had been hidden in plain sight for decades, not evolving with the changing nature of Auckland city life - they re-imagined it, making it people focused. They wanted to encourage people to spend time in the area, so they made it into a nice place to spend time - introducing trees for shade, seats to sit on, and cycle parking so people could stop and go into the shops and cafés. They wanted to encourage people to walk and cycle along the street, so they made it easier to walk and cycle. And they wanted to support local businesses along the street, so they designed a flexible street that supported business needs, whilst encouraging people to enjoy the street. The numbers speak for themselves.

These seemingly simple and straightforward interventions produced a "440% increase in spending on the street", and a "140% increase in pedestrian footfall on the street".

People responsible for policy making, and the design of our cities, create places first and foremost for people. Places that keep us healthy, happy, and prosperous.

Turn Old Kennedy Road into a assimulated Old European Heritage 6 storey buildings MainStreet theme where people want to live, visit and with retail and businesses on the first floor, 20% of the condo units are affortable and underground parking

1. **Social Connectivity and Community Building**: A well-designed public realm provides spaces that encourage social interactions and community engagement. These spaces become gathering points for people of diverse backgrounds, fostering a sense of belonging and connectedness. As residents come together, relationships are formed, trust is built, and a stronger sense of community emerges.
2. **Improved Mental and Physical Health**: Accessible and aesthetically pleasing public spaces contribute to better mental well-being by offering areas for relaxation, recreation, and stress relief. They also encourage physical activity, such as walking, jogging, or cycling, which promotes a healthier lifestyle for residents of all ages.
3. **Economic Benefits**: A vibrant public realm attracts businesses, residents, and tourists alike. Local economies flourish as visitors spend time and money in these attractive spaces. This leads to increased property values, higher demand for housing, and greater economic opportunities for local entrepreneurs.
4. **Environmental Sustainability**: Creating a great public realm often involves incorporating green spaces, pedestrian-friendly areas, and sustainable design principles. This focus on environmental sustainability helps to combat climate change, improve air, water quality, and preserve natural habitats within urban environments.
5. **Cultural Expression and Identity**: Public spaces can be designed to celebrate local culture, heritage, and traditions. Art installations, cultural events, and festivals held in these areas would help preserve and promote a community's unique identity, fostering pride among residents.
6. **Inclusivity and Accessibility**: A well-designed public realm considers the needs of all residents, including children, the elderly, people with disabilities, and those from diverse socioeconomic backgrounds. Universal accessibility ensures that everyone can participate and benefit from the public spaces, promoting equality and inclusivity.
7. **Reduced Crime and Increased Safety**: Active and well-maintained public spaces discourage criminal activities by promoting a sense of ownership and surveillance among community members. Increased foot traffic and visibility contribute to safer neighborhoods and deter potential wrongdoers.

8. **Traffic and Pollution Reduction**: Creating attractive public spaces encourages alternative transportation methods such as walking and cycling, reducing reliance on cars. This leads to a decrease in traffic congestion and lowers carbon emissions, contributing to a greener and more sustainable community.
9. **Tourism and Cultural Exchange**: A well-designed public realm with unique and engaging spaces attracts tourists, fostering cultural exchange and economic growth through tourism-related businesses. Visitors gain an appreciation for the community, leading to positive word-of-mouth and increased tourism revenue.
10. **Future-Proofing Urban Areas**: By investing in a great public realm, cities and communities can adapt and respond to evolving needs and challenges. Such spaces can be flexible and adaptable, ensuring that urban areas remain relevant, resilient, and enjoyable for generations to come.

■ MILLIKEN MILLS HERITAGE DISTRICT "INTENSIFY AND ASSIMILATION"

The planning of the newly proposed Milliken Mills Heritage District, specifically Mainstreet Milliken is an innovative idea that aims to create a healthy, complete heritage community catering to residents of all ages and abilities. The approach of assimilating new buildings as heritage buildings in a newly created heritage districts is important. However, preserving the architectural character of the past is a priority. Also, striking a balance between heritage assimilation and the need for efficient land use and
affordable housing is not uncommon:

1. **Heritage Conservation Plan**: Heritage districts typically have conservation plans and guidelines in place to protect the historical significance of the area. Any proposal to assimilate new buildings with heritage structures would need to align with these guidelines to ensure that the character of the assimilation heritage district is preserved.
2. **Mixed-Use Development**: The Mainstreet Milliken project incorporates a mix of prefabricated modular condominium housing with retail and employment spaces on the ground floor. This kind of mixed-use development encourages walkability, creates vibrant street life, and supports local businesses.
3. **Transit Oriented Development**: Emphasizing the benefits of the proposed development's proximity to the GO Train stations can also be a strong point. transit oriented development are encouraged in many urban planning contexts to promote public transportation use and reduce car dependency.
4. **Regulatory and Zoning Considerations:** Reviewing and potentially updating zoning regulations and heritage district guidelines to accommodate the proposed development will be necessary.
5. **Environmental Impact**: The impact on the environment should be assessed to ensure that the proposed development aligns with sustainability goals.
6. **Economic Viability**: Demonstrating that the project is economically feasible and sustainable is crucial. Developers and stakeholders must ensure that the assimilated heritage buildings meet modern construction standards and safety requirements while still preserving its historical elements.
7. **Public Support and Consultation**: Implementing such a development requires community engagement and public support. Residents and local stakeholders will be involved in the decision-making process so we can understand their concerns and gain their approval.
8. **Architectural Design and Integration**: The design of the new buildings should carefully consider the surrounding building structures to blend in and compliment the existing architectural heritage style if possible. The goal is to achieve a harmonious balance between the old and the new.
9. **Affordable Housing Benefits**: Allocating 20% of the housing units as affordable is a commendable initiative. This ensures people with different income levels can access affordable quality housing in the community.
10. **Promoting Active Transportation**: By designing the neighborhood to encourage pedestrian walking, and cycling, it promotes active and sustainable transit, leading to reduced traffic congestion and a healthier community.
11. **Access to Community Facilities**: Providing convenient access to community facilities like schools, libraries, community centers and parks is crucial for creating a sense of community and enhancing the overall quality of life for residents.
12. **Public Transit Connectivity**: Having two GO Stations, with one at Steeles Ave and the other one at Denison Street offers convenient access to public transportation, making it easier for residents to travel to major employment and retail centers beyond the local community.
13. **Indoor Urban Vertical Farming**: Implementing urban vertical farming at the GO Stations is a forward-thinking approach to sustainable food production and promoting local agriculture. It can also serve as a community focal point and an educational opportunity.
14. **Smart Infrastructure**: Integrating a central garbage collection system and autonomous vehicles within a geo-fenced environment can improve the efficiency of waste management and address first mile/last mile transit challenges, making the community more sustainable and accessible.

Creating great public realm is not just about aesthetics; it is a crucial investment in the well-being, prosperity, and sustainability of a community. It brings people together, enriches lives, and lays

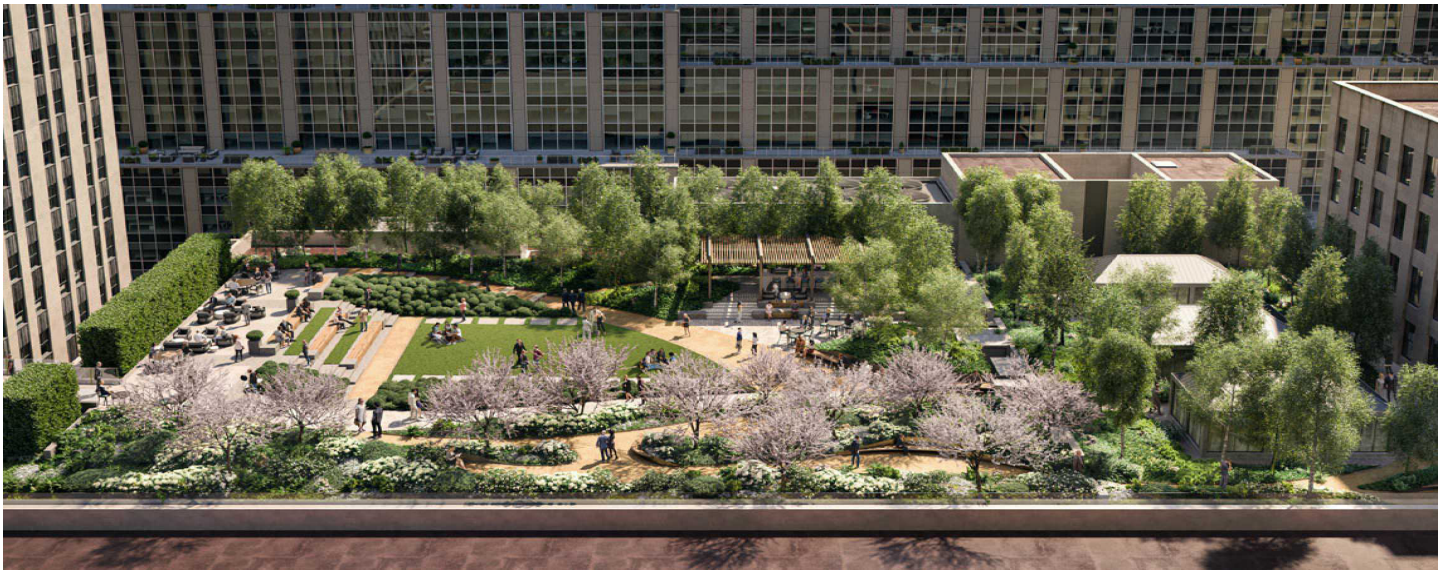


Figure 5. **Radio City Music Hall Rooftop Park**

the foundation for a bright and prosperous future. It will not only improve the residents' quality of life but also attract investment and contribute to the prosperity of the area. Overall, achieving a balance between assimilating heritage buildings and meeting the demand for affordable housing is a complex task. Successful projects often involve collaboration between various stakeholders, careful planning, and a shared vision for the future of the Mainstreet Milliken Mills (Old Kennedy Road) newly created Heritage District.

BY 2050, 70% OF THE WORLD'S POPULATION WILL BE URBAN. Today, 55% of the world's population lives in urban areas, a proportion that is expected to increase to 70% by 2050. Projections show that urbanization, the gradual shift in residence of the human population from rural to urban areas, combined with the overall growth of the world's population could add another 2.5 billion people to urban areas by 2050, with close to 90% of this increase taking place in Asia and Africa.

The 2018 Revision of World Urbanization Prospects produced by the Population Division of the UN Department of Economic and Social Affairs (UN DESA) notes that future increases in the size of the world's urban population are expected to be highly concentrated in just a few countries. Together, India, China and Nigeria will account for 35% of the projected growth of the world's urban population between 2018 and 2050. By 2050, it is projected that India will have added 416 million urban dwellers, China 255 million, Nigeria 189 million and by 2100, Canada will add 60 million.

The urban population of the world has grown rapidly from 751 million in 1950 to 4.2 billion in 2018. Asia, despite its relatively lower level of urbanization, is home to 54% of the world's urban population, followed by Europe and Africa with 13% each. Today, the most urbanized regions include North America (with 84% of its population living in urban areas in 2018), Latin America and the Caribbean (81%), Europe (74%) and Oceania (68%).

CHANGE STARTS AT THE CITY AND ITS PEOPLE'S WILLINGNESS FOR CHANGE

As impassioned citizens, we tend to argue the case for the one project or the plan that addresses what we see that we need to build a sustainable city, but the reality is that we need to push from many different angles at once. The most basic premise for change starts at the roots of a city, with its people's willingness for change, and in conversation.

Figure 6. **Vancouver's Canada Line Oakridge Station - 9 Acre Rooftop Park on top of the Oakridge Mall**

The level on top of this grassroots communication, requires that citizens have access to the channels that feed their information to city officials who can continue the conversation at the city and policy level.

To keep this purely scientific, with the goal of decarbonizing city economies and cities by 2053 (which is what we need to do globally to avoid major consequences of climate change), Scientific American suggests we need to do the following:

1. Create land-use legislation that will smartly raise density in our cities and communities, and will increase access to amenities, shopping, and employment within our communities.
2. Make urban areas more self-reliant for food, power, and water.
3. Create multiple options for recycling, reuse, and remanufacturing of materials, along with skilled trades people for those activities.
4. Make urban areas accessible by car-free mobility; invest in viable alternatives for walking, biking, and public transit.
5. Plan Organized Infill, Grow Density Tall and Reduce Sprawl in transit oriented development', as Canada can expect high levels of immigration over the coming years.
6. Plan transit oriented development along Metrolinx rail corridors and future 407 Transitway rail corridor.
7. Invest in and complete the integrate GTA rail transit network.
8. Transit oriented development Affordable Housing Opportunities.

Two of the most commonly heard concerns are that traffic is unbearable and houses are too expensive to buy or rent.

The answer to these two problems seems simple: build neighborhoods with less expensive homes where cars are needed less.

The types of development that produce these kinds of neighborhoods is generally known as Transit Oriented Development.

03D-LeMarais_Paris

Figure 9. **03F-Reisetipps_Barri_Gotic_Spain.jpeg**

Figure 7. **Mt Pleasant & Eglinton, Toronto**

Figure 8. **Parisian Building - Paris, France**

Figure 10. **Type of Architecture Feel for Mainstreet Milliken - "Old Kennedy Road"**

Figure 11. **03C-Shambles_England**

Figure 12. **03H-Jordaan_Amsterdam_Netherland**

Figure 13. **Invest in Viable Alternatives for Walking, Biking, and Public Transit**

Anecdotally, there are three key factors in real estate – "location, location, location", adding: "creating a great place means you create a great location".

TOD ENCOMPASS MIDRISE TO HIGHRISE CONDOS WITH VIBRANT DOWNTOWNS THAT CAN ACCESS MAJOR JOB AND ECONOMIC CENTERS.

What they have in common is proximity to transit, a pedestrian-oriented nature, and the density needed to support the economy and community that are necessary for healthy and livable neighborhoods. The main obstacle is simple, local, and solvable – change zoning to allow for the creation of mid-rise and high-rise transit oriented development and walkable neighborhoods.

This obstacle not only affects individuals, but it also affects entire communities. The suburbs were once places where working people could strike out on their own, buy a home, easily get to jobs, move up the economic ladder, and contribute to the local economy and community, but that has vanished as competition for housing has grown and prices have skyrocketed. When younger families don't have the opportunity to buy an affordable starter home and build equity, empty nesters have nobody to sell their homes to when they want to downsize or move.

When people who make a more modest living don't have housing opportunities, jobs, community, and economy that they can build in, they go elsewhere. When there is not enough affordable rental housing, especially in walkable and vibrant neighborhoods, younger residents leave for the places that do, or stay at home for increasing longer periods of time. In York Region, a lot of 18-to-35-year-olds are still living with their parents in 2023.

Without new affordable housing and walkable neighborhoods, housing markets tighten, and costs rise, leading to less disposable income, longer commutes, the need to work longer hours, more stress, and poorer health for the region's households. This disparity falls most heavily on the region's lower-income households who, as referenced here are few places in the region which have good regional connectivity and job opportunities but prohibit the housing people need to take advantage of them. Most of the GO rail stations in the GTA are just parking lots.

THE MERITS OF TODs ARE MANY: improved mobility, reduced environmental impact, economic development, and quality urban design all make for highly desirable

places to live and work. But these benefits are not necessarily shared equally. In order to build TODs that will contribute to equity and prosperity for all, policymakers and developers must not only put in place the policies to ensure its construction, but also policies which ensure that these new mid-rise and high-rise condos are available to a wide range of people with a diversity of incomes, professions, and family sizes. People want these homes and neighborhoods, and we can build them if we choose to. Walkable neighborhoods with good access to transit are increasingly valued, by younger residents.

Good contextual Transit Oriented Development development does more than just build homes. It supports the economy with shops, restaurants, jobs, and community facilities, all within walking distance. These don't just serve the new development but benefit the surrounding area as well. TOD transit can only thrive when the rail transit is reliable, frequent, and affordable and caters to the base transit riders. Complete TOD strategies rely on a rail transit network that provide seamless interfaces to local transit networks, that are safe, well-managed, functionally integrated, mixed-used, inexpensive, and adequately funded, so transit remains an attractive option.

REASON FOR PROOF OF CONCEPT PILOT: "GAIN KNOWLEDGE AND REDUCE THE RISK"

1. **Safety Testing**: Conducting a proof of concept allows for the safe testing of autonomous vehicles in a controlled and limited environment. This ensures that potential risks and issues are identified and addressed before expanding the technology to broader areas, mitigating potential accidents and concerns related to autonomous vehicle deployment.
2. **Traffic Optimization**: Autonomous vehicles have the potential to optimize traffic flow, reduce congestion, and enhance overall transportation efficiency in an urban environment. The AV geofenced pilot can showcase how these vehicles interact with one another and traditional vehicles, leading to better traffic management.
3. **Environmental Impact**: Urban vertical farming can significantly reduce the carbon footprint of food production by utilizing unused urban spaces. The pilot can demonstrate the benefits of locally sourced produce, reduced transportation emissions, and sustainable agricultural practices, helping to combat food insecurity and environmental challenges.
4. **Resource Efficiency**: Urban Vertical farming maximizes the use of limited land and reduces water consumption, fertilizers, and pesticides, making it a more resource-efficient method of agriculture. The pilot can showcase these advantages and encourage widespread adoption.
5. **Waste Management**: ENVAC central garbage waste-to-energy collection systems provide an innovative way to manage urban waste efficiently. The pilot can demonstrate how this system streamlines waste collection, reduces litter, and generates clean energy, contributing to a greener and more sustainable city.
6. **Public Acceptance**: Implementing a pilot allows for early public exposure to these technologies, helping to build trust and acceptance among residents. By showing tangible benefits and addressing concerns, it can pave the way for broader adoption and support from the community.
7. **Data Collection**: Pilots offer an opportunity to gather valuable data on the performance and impact of these technologies in real-world scenarios. This data can be used to fine-tune the systems, improve efficiency, and inform policymakers for future deployments.
8. **Economic Viability**: The pilot can assess the economic viability of these technologies, considering factors such as cost savings, potential revenue streams, and job creation. Demonstrating positive economic outcomes can encourage private and public investments in these initiatives.
9. **Innovation Showcase**: Such a pilot can position the city or region as a leader in adopting advanced technologies and sustainable practices. This can attract businesses, investors, and talent interested in contributing to and benefiting from a forward-thinking urban environment.
10. **Sustainable Development**: By integrating autonomous vehicles, vertical farming, and waste-to-energy systems, the pilot can exemplify a comprehensive approach to sustainable urban development, aligning with global sustainability goals and inspiring other communities to follow suit.

A Proof-Of-Concept Pilot for autonomous vehicles in a geofenced environment, urban vertical farming, and ENVAC central garbage waste-to-energy collection system offers a unique opportunity to test and showcase innovative, sustainable technologies, address urban challenges, and set a precedent for future developments in the city or region.

TECHNOLOGIES OPENS UP OPPORTUNITIES

Research shows that it is likely that within 10 to 20 years the vast majority of auto trips in Toronto and the GTA will be made on-demand, shared and autonomous vehicles (AVs). Since AVs will not need to sit idle in parking lots, much of the surface parking near rail stations will likely become disused, potentially blighting rail station centers. Instead of letting this happen, we can build well over 400,000 new condos in complete neighborhoods along the Stouffville TODs rail corridor with enough shops, offices, community centers, parks and schools that will support this growth, and the surrounding communities as well. We have seen housing costs rise unabated and continue to get pushed further away from central, walkable areas with access to jobs. But it affects others as well

– young families, seniors and anyone who needs affordable housing and doesn't want to or can afford to spend hours a day behind the wheel or traveling long distances by transit or two plus hours on GO Trains.

New technologies provide an opportunity to build on and accelerate this momentum. It is estimated that by 2041, up to 75% of trips first mile/last mile (FM/LM) to and from transit oriented development' stations could be in on-demand, shared and autonomous vehicles, which would reduce needed parking near these rail transit stations. This will make it even more advantageous to develop all of the land used solely for surface parking within a 1 km radius of each of our GO rail transit stations.

Without intervention, the land is used solely for surface parking within a 1 km radius of each of our GO rail stations. Without intervention, these spaces could become large expanses of unused, unproductive, and simply ugly asphalt. But if municipalities work together with developers, these lots provide an unprecedented opportunity to create approximately 400,000 mid-rise to high-rise condos and home to 850,000 people throughout Markham, Stouffville and Scarborough, East York, and Toronto in the Stouffville GO Transit TODs corridor.

It is not enough to simply allow for higher density TODs, development needs to build complete neighborhoods, and identify how density can be attractive and bring value to an area. It needs to be done in conjunction with community input and address larger community needs.

Figure 14.**Autonomous Vehicles Operating in a Geofenced Environment**

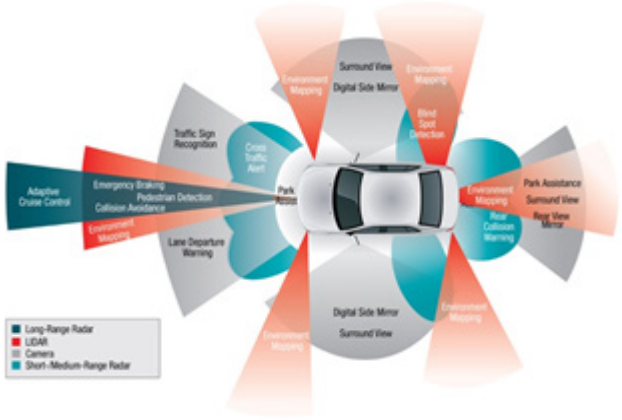
It's not enough to simply encourage private development. The public sector needs to be a full partner in planning walkable communities, ensuring the right infrastructure, public spaces, daily shopping needs by developing complete TOD communities and minimizing car trips.

At its heart, TODs are more than just one project or zoning change. It's a new vision for the area, and a region-wide model for growth. TODs design principles have one fundamental goal, to create great people-centered places connected to transit. While every place might be a little bit different, there are a number of design principles and imperatives that apply to the vast majority of TOD stations.

ASSIMULATED MILLIKEN HERITAGE DISTRICT

A central garbage collection system is an efficient and comprehensive waste management approach that involves the collection, disposal, and recycling of waste from various sources in a centralized location. This system offers numerous benefits to both communities and the environment, making it a compelling choice for modern waste management.

a. **Data-Driven Decision Making**: A centralized waste management system facilitates data collection and analysis. Waste composition and generation patterns can be studied to identify trends and develop targeted strategies to further enhance waste reduction and recycling efforts.



b. **Adaptability and Scalability**: Central garbage collection systems can adapt to the changing needs of communities and can be scaled up or down based on population growth or waste generation rates. This flexibility allows for long-term sustainability and efficient management of waste in evolving urban landscapes.

c. **Compliance with Environmental Regulations**: Centralized waste management systems are better equipped to meet and exceed environmental regulations and sustainability goals set by local, regional, and national authorities. Compliance with these regulations fosters responsible waste management practices and demonstrates commitment to environmental stewardship.

d. **Resource Recovery and Energy Generation**: In addition to recycling, modern central garbage collection systems may incorporate resource recovery facilities, such as waste-to-energy plants and waste processing technologies. These facilities convert non-recyclable waste into energy, reducing the reliance on fossil fuels and providing an alternative, sustainable energy source for communities.

Figure 15. **High-Speed Powered Chute Systems For Waste Removal**

Figure 16. **Walkable Urbanism**

"WALKABLE URBANISM" – WASHINGTON, D.C. BY CHRISTOPHER LEINBERGER

1. While there are numerous new or redeveloped walkable bedroom communities, it is the walkable urban places of regional significance that are the most important. It is in these places that employment concentrates, education, and health institutions are established, and entertainment, cultural, and sports venues are located. High-density, for sale residential development also occurs in these regionally significant walkable places to take advantage of amenities such as restaurants, retail businesses, cultural events, and even the ability to walk to work, even though the majority of the square footage developed is income-producing. The growth in regionally significant walkable urban places has been greater in metro D.C. than in any other metropolitan area in the USA over the past 15 years.
2. There are five types of regionally significant walkable urban places—downtown, downtown adjacent, suburban town center, strip commercial redevelopment, and Greenfields. All five can and will occur in one metropolitan area, as is the case in Washington, D.C.
3. The Walkable Urban Trend has been led by the often-reported redevelopment of center-city Washington which has recently replaced midtown Manhattan as the healthiest office market in the country, but the real story is the urban transformation of the suburbs. About 70 percent of the walkable urban places in the D.C. region are in the suburbs, places such as Ballston, Clarendon, Crystal City, Reston Town Center, Rosslyn in Virginia, Bethesda, Silver Spring, Rockville, and National Harbor in Maryland. None of these walkable places was on the real estate industry radar 25 years ago; today, they are getting 40 to 100 percent price premiums over comparable car- dependent product in their submarkets.
4. Over 90 percent of the more than 35 regionally significant walkable urban places in Metro D.C. have rail transit access. The 10 percent that do not, either will have it in the next five years or are working hard to get it as soon as possible. Bus transit continues to be important, but there are no examples of private sector investment being stimulated by a bus stop, while investors have poured tens of billions of dollars into development around rail transit stations.
5. Developers are willing to contribute to the Construction of Rail Transit. Looking back to how nearly all streetcar lines were built 100 years ago, developers are realizing that government does not have sufficient financial resources, so the only

way to get new transit built is to pay for part of it themselves. Private developer money has been or will be a part of the funding of the recently opened New York Avenue Metrorail station in northeast D.C., the extension of Metrorail's Silver Line through Tysons Corner, Virginia; the rail transit to allow urbanization of the White Flint area in Maryland; and a proposed new Metrorail station at Potomac Yards in Alexandria, Virginia. Because transportation drives development, developers are contributing financially to get the rail transit that makes their projects work.

6. NIMBYs (Not in My Backyard) are becoming YIMBYs (Yes in My Backyard). NIMBY opposition was generated over the past half century by construction of car- dependent suburban development, which lowered the quality of life of existing neighborhoods. No one wanted a strip mall next to his or her subdivision. This led to the belief that more is less, that more car-dependent development lowers the quality of life. Walkable urban development has the opposite effect: as more density is built within walking distance of retailers, jobs, and transit, quality of life and real estate values improve, demonstrating that with walkable urban development, more is better.
7. Its land mass—the land occupied by these seven walkable urban places. Some Metro D.C. neighborhood groups have come together to support increased density and development degree wedge centered downtowns and extending to and past the wealthy in their backyard. Two of the country's largest conversions of car-dependent suburban developments into walkable urban places—at Tysons Corner and White Flint—have neighborhood coalitions that strongly support the vastly increased density that the developers are seeking.
8. The residential neighbors are saying, "Yes, in my backyard." These residential neighbors have seen the redevelopment of nearby Ballston, Tysons Corner, Bethesda, and White Flint, and want the same in their backyard. They are urging the doubling and tripling of density not just to improve their quality of life; they probably intuit that living in a suburban area within walking distance of an urban district will increase their home values by 40 to 80 percent per square feet. Downtown Redevelopment is just the start of the Revival in the Community, but lasting change is also occurring in the downtown-adjacent places located all around the center city. These areas have a unique character and product mix at a somewhat lower density than that of downtown. The largest redevelopment trend of the next generation will be the conversion of dead or dying strip commercial centers

Figure 17. **YIMBYs – "Yes In My Backyard" – Creating Great Places with Character and Public Realm**

in the suburbs into walkable urban places. The national model is Arlington, Virginia, which has seven regionally significant walkable urban places built around its 11 Metrorail stations.

9. Some Counties now receives 60 percent of its tax revenue from 10 percent of its land area. Walkable urban places were first developed in the "favored quarter"—the 90 neighborhoods in the region, which are toward the northwest in Metro D.C. This was the same path car-dependent suburban development took during the late 20th century, though the new walkable urban places are in the inner suburbs and the District of Columbia. However, as rail stations in the favored quarter approach buildout and the rail lines serving them reach capacity, growth has begun to shift to the two edges of the favored quarter, nearing areas where low-income households live. This could help the region address societal problems because these areas have been bypassed by economic and real estate growth for decades. New growth is heading to the northeast and southeast, where it has rarely gone over the past half century.
10. Greenfield Walkable Urban Places—also referred to as lifestyle centers—require massive upfront infusions of patient equity, but the future returns are outsized. Sponsors of such projects will probably be deep-pocket private investors with long-term investment horizons. In Metro D.C., Reston Town Center is the granddaddy of this trend, recently followed by National Harbor.

    Some may think, yes, but Washington is unique; it is the nation's capital. However, as recently as 1990, Metro, D.C. only had two regionally significant walkable urbanism places; Georgetown and Old Town Alexandria, both tourism-based areas. More than 30 such places have been built since then, resulting from over 100 billion dollars of private investment. And Washington was the nation's capital in 1990, as well.

DESIGNING MILLIKEN MAINSTREET HERITAGE DISTRICT

Designing a sustainable and modern main street for Old Kennedy Road between Steeles Avenue and Denison Road requires careful consideration of various elements to create a vibrant and environmentally friendly community.
By combining modern technologies, sustainable practices, and a thoughtful urban planning approach, Old Kennedy Road will become a model for future developments, showcasing how a community can thrive while assimulating its heritage past and embracing a green and connected future.

1. **Mixed-Use Development:** The main street will feature prefabricated 4 to 10 storey condominium buildings with a heritage façade. These buildings will house a mix of residential, commercial, and office spaces. The ground floor will be dedicated to retail shops and office to promote pedestrian activity and create a lively streetscape.
2. **Affordable Housing**: To address the need for affordable housing, 20% of the residential units in each building will be designated as affordable housing. This will help ensure economic diversity and inclusivity within the community.
3. **Economic Growth**: Concentrating development around transit stations can attract investment and lead to economic growth in the area. The presence of commercial spaces and destinations can create job opportunities and boost local businesses, contributing to the economic prosperity of the Milliken Mainstreet Village Community.

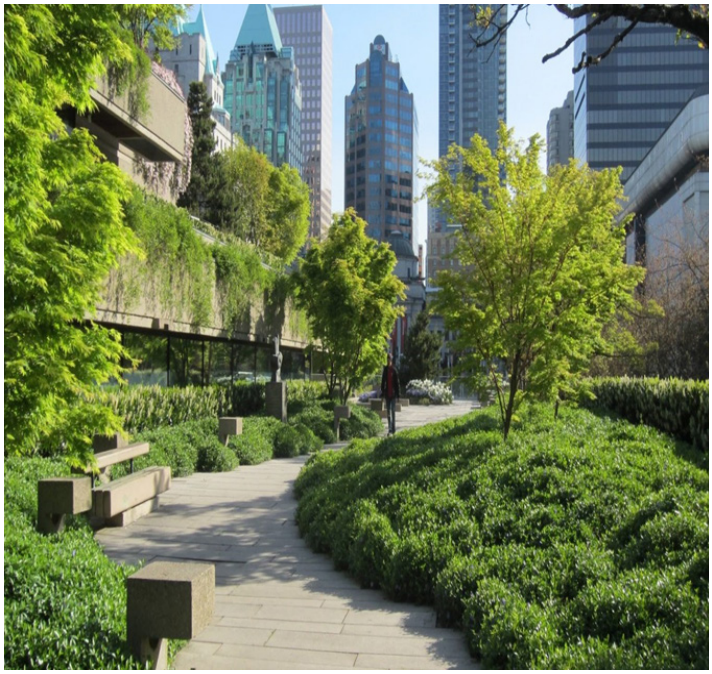


Figure 18. **Milliken Mainstreet Heritage Landscaping**

Figure 19. **Old Kennedy Road Mainstreet Concept Plan**

4. **Community Interaction and Social Cohesion**: A well-designed public realm can act as a gathering space for residents, promoting community interaction and social cohesion. This sense of community can enhance the overall quality of life for residents and create a strong neighborhood identity.
5. **Urban Revitalization**: Transforming transit stations and their surrounding areas into attractive destinations can revitalize previously underutilized or neglected parts of the city. This can attract new residents, businesses, and investments, leading to the renewal of the entire community.
6. **Central Garbage Collection System**: A centralized waste management system will be implemented to streamline waste collection and disposal. Underground garbage disposal systems with separate compartments for recyclables and organic waste will help keep the streets clean and reduce the visual impact of waste bins.
7. **Autonomous Vehicles (AVs)**: The Milliken Mills Mainstreet will operate within a geo-fenced environment, allowing autonomous vehicles to safely navigate the area. AVs will provide convenient transportation options for residents and visitors while reducing traffic congestion and emissions.
8. **Indoor Urban Vertical Farming**: To enhance food sustainability and promote green living, the rooftops of the buildings will be utilized for urban vertical farming. This will allow residents and local businesses to grow fresh produce, reducing the need for long-distance transportation of food and contributing to a greener environment.
9. **Solar Panels**: Solar panels will be installed on the rooftops of the buildings to harness renewable energy from the sun. This clean energy source will be used to power common areas, lighting, and other electrical needs within the community, reducing the reliance on non-renewable energy sources.Geo-Thermal System: A geo-thermal heating and cooling system will be implemented to provide efficient temperature regulation for the buildings. This system will utilize the earth's natural heat to warm the buildings in winter and cool them in summer, further reducing the carbon footprint of the community.
10. **Green Spaces and Pedestrian Zones**: The Milliken Mills Mainstreet will feature ample green spaces, such as small parks and tree-lined sidewalks, creating a pleasant environment for residents and visitors to enjoy. Pedestrian-friendly zones will encourage walking and cycling, promoting a healthier lifestyle.
11. **Smart City Infrastructure:** To support the autonomous vehicles and other modern technologies, the main street will be equipped with smart city infrastructure, including advanced traffic management systems, public Wi-Fi, and smart lighting.
12. **Community Engagement**: Community involvement and engagement will be prioritized throughout the planning and development process. Residents, local businesses, and stakeholders will be consulted to ensure that the design meets their needs and aspirations.
13. **Environmental Benefits**: By promoting public transit usage and reducing the need for long commutes, the Milliken Mainstreet Village Community can contribute to reduced air pollution and lower carbon emissions, supporting environmental conservation efforts.

Creating great places and great public realm, planning medium to high density, providing job opportunities, and strategically locating retail, commercial spaces and destinations at rail transit stations can lead to a sustainable, thriving, and well-connected community that benefits residents and the environment alike. It fosters economic growth, social interaction, and a better quality of life for everyone involved.

03I-Mainstreet_Milliken_Heritage_District.jpeg - "Old Kennedy Road"

2 Acres Urban Vertical Farm produces more than a Flat Farm that uses 370 acres - Urban Organic Gardener

Figure 20. **Urban Vertical Farming - Strawberries**

Figure 21. **Urban Vertical Farming - Lettuce**

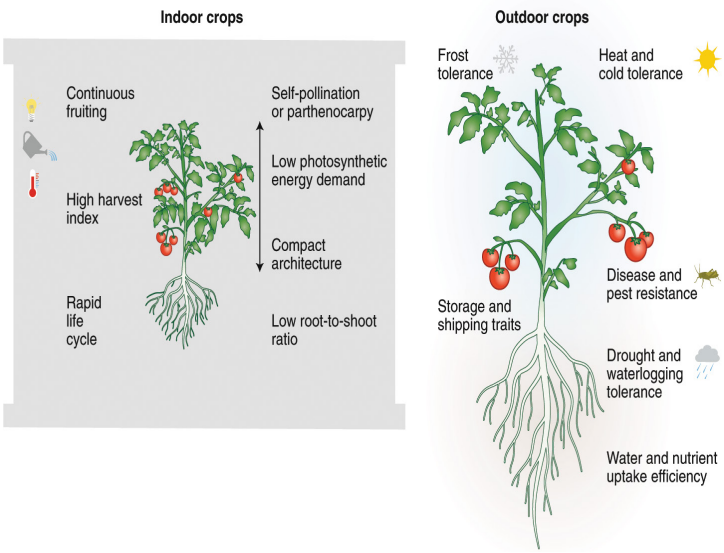


Figure 23.**No Pesticides, No Climate Change, fresh**
Figure 24.**Utilization of land, Local, Uses Less Water**
Figure 25.**12 crops at year, Reduce Carbon Footprint**

Figure 22. **Urban Vertical Farming - Tomatoes**

Figure 26. **Assimulated Heritage Mainstreet Milliken Mills - 'Formerly Old Kennedy Road'**

SPORTS AND ENTERTAINMENT DESTINATION

PUTTING THE HEART IN MARKHAM CENTRE

"A COMMUNITY THAT LIVES, WORKS, AND PLAYS TOGETHER, STAYS TOGETHER"

APPENDIX 3

Notice of Motion: Creating a Major Sports and Entertainment Destination
Moved by: Regional Councillor Jim Jones
Seconded by: Councillor Keith Irish

CREATING A MAJOR TOD DESTINATION AT MARKHAM CENTRE

■ **PUTTING THE HEART IN MARKHAM**

The Olympic motto is "**Citius, Altius, Fortius**," which is Latin for "**Faster, Higher, Stronger**." This motto embodies the spirit and values of the Olympic Games, encouraging athletes to push themselves to excel and reach their highest potential.

While it is true that Olympians are taught to be gracious in both victory and defeat, the idea of being a "good loser" and a "good winner" is more about sportsmanship and respect for one's opponents rather than specifically being taught how to lose or win. Olympians are expected to display respect, fair play, and integrity, both on and off the field of play.

Additionally, Olympians are indeed encouraged to work hard and achieve their goals through dedication, perseverance, and discipline. Cheating is strictly prohibited in the Olympic Games, and athletes are expected to compete fairly, following the rules and regulations set by their respective sports and international governing bodies. The Olympic Games promote the ideals of fair competition, respect, and ethical conduct among all participants.

■ **FOR THE PEOPLE OF MARKHAM AND ASPIRING CHAMPIONS**:

Today, I stand before you to ignite the fire within your hearts and remind you of the incredible power that lies dormant within each and every one of us. We gather here today under the banner of the Olympic motto: "Citius, Altius, Fortius" – "Faster, Higher, Stronger." These three words encapsulate the essence of what it means to be an Olympian, but they also hold a deeper meaning that resonates with every individual on their personal journey of greatness.

"Faster" reminds us that life is a race—an exhilarating sprint towards our dreams and aspirations. It reminds us that complacency and mediocrity have no place in our pursuit of excellence. To be faster is not merely about physical speed, but the urgency to seize every moment, to make each day count, and to relentlessly pursue our goals with unwavering determination. It calls us to shatter the barriers that limit our potential and break through the boundaries of our own self-imposed limitations.

"**Higher**" symbolizes the soaring heights we can reach when we dare to dream beyond the ordinary. It compels us to elevate our expectations, to set our sights on extraordinary achievements, and to transcend the limitations of what we think is possible. To strive higher is to believe in the impossible, to conquer our fears, and to embrace the discomfort of growth. It challenges us to push beyond our comfort zones, to expand our horizons, and to seek greatness in every aspect of our lives.

"**Stronger**" embodies the resilience, both physical and mental, required to overcome the obstacles and adversities that we inevitably encounter on our journey. It reminds us that strength is not solely measured by physical prowess, but by the indomitable spirit that resides within us. To be stronger means to persist in the face of failure, to rise each time we fall, and to emerge from challenges with newfound wisdom and tenacity. It calls us to cultivate our inner strength, to forge unbreakable resolve, and to never surrender in the pursuit of our dreams.

But let us not confine the Olympic motto to the realm of sports alone, for it holds profound significance in every facet of our lives. It challenges us to be faster in chasing our ambitions, higher in reaching for our dreams, and stronger in facing life's hurdles. It invites us to push beyond our perceived limits, to defy expectations, and to become the very best versions of ourselves.

Today, I implore you to embrace the spirit of "Citius, Altius, Fortius" in all that you do. As you embark on your personal odyssey of greatness, remember that the path to success is not always easy, but it is in the struggle, the sweat, and the sacrifices that we find our true strength. Believe in yourself, for you are capable of achieving greatness beyond your wildest imagination.

May the Olympic motto serve as a constant reminder of your untapped potential, your unyielding spirit, and your insatiable hunger for success. Let it fuel your drive, ignite your passion, and propel you to scale heights you never thought possible.

Today, we stand united, inspired by the Olympic motto—"**Faster, Higher, Stronger**." Go forth, my fellow Canadians and Neighbours and conquer the world with your relentless pursuit of excellence.

An Olympic dream can be important for a child for several reasons, though it's worth noting that not all children necessarily need to have Olympic dreams to lead fulfilling lives. Having a Olympic dream can offer many benefits, the emphasis is on the journey, personal growth, and overall well-being of the child. Unrealistic pressure, overemphasis on winning at all costs, and neglecting other aspects of a child's development can have negative consequences. Balancing the pursuit of an Olympic dream with a well-rounded childhood experience is key.

- Goal Setting and Discipline
- Healthy Lifestyle
- Teamwork and Collaboration
- Confidence and Self-Esteem
- Cultural Exchange and Diversity
- Setting a Positive Example
- Education and Scholarship Opportunities
- Personal Passion and Joy

A Community that lives, works and plays together, Stays together.

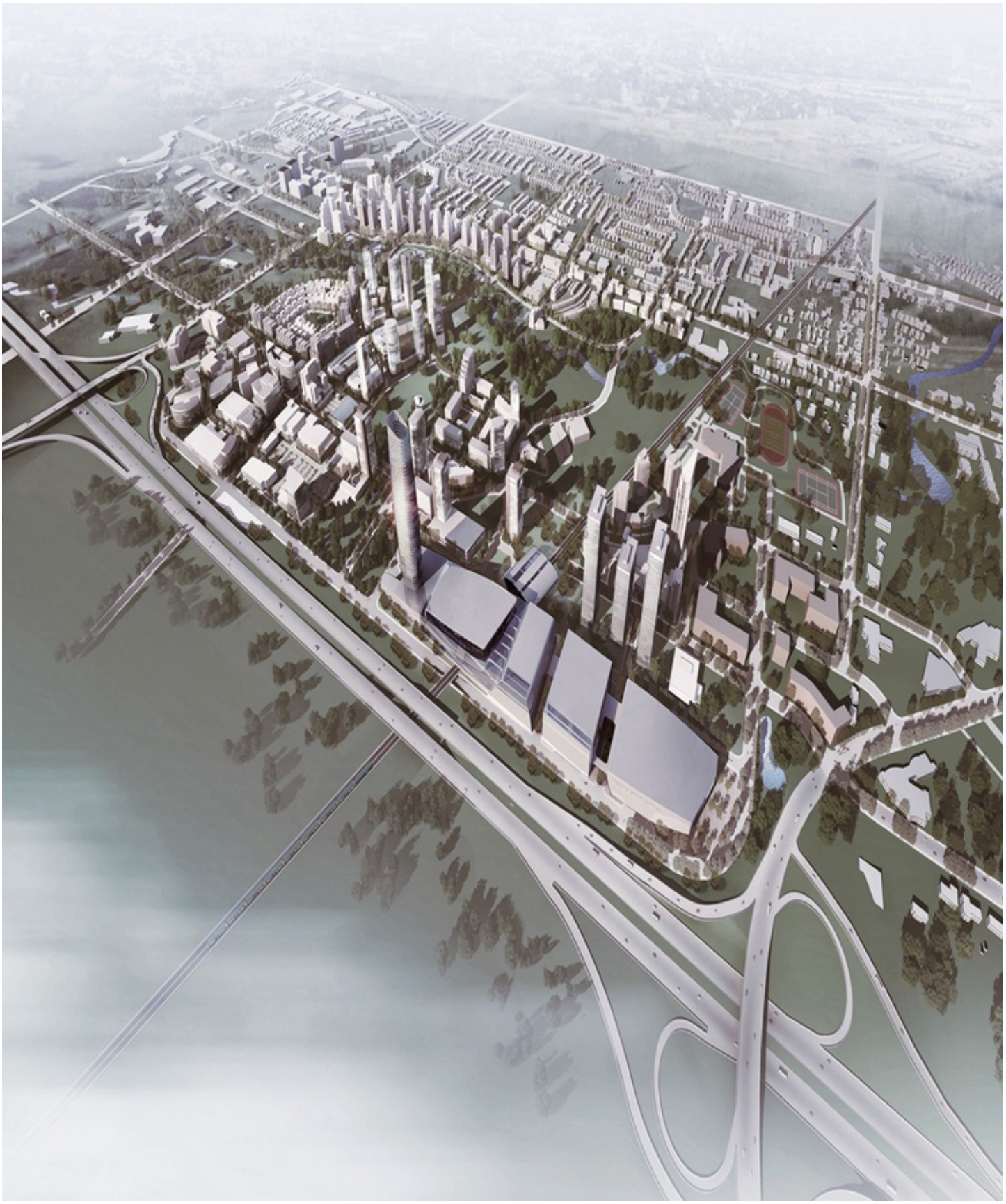


Figure 1. **3D Model of MISTA Sports Complex,bMarkham Centre**

Figure 2. **Inside City of Richmond Multi-Sport Olympic Park**

Figure 3. **Richmond Olympic Speed Skating Oval - Multi-Sport Arena Park**

CREATE A COMPREHENSIVE MULTI-SPORTS, ENTERTAINMENT, CONVENTION CENTRE, AND SIX-STAR HOTEL DESTINATION:

Create a comprehensive major multi-sports, entertainment, and convention centre destination, alongside a six-star hotel at the Unionville GO Transit and future 407 Station area. These ambitious projects aim to provide state-of-the-art facilities for athletes, entertainment enthusiasts, and convention attendees, while boosting tourism and economic development in Markham and GTA. The following points outline the key features and benefits of this proposed undertaking:

1. **Facility Description**:
   - The proposed Sports, Entertainment, and Convention Centre Complex will house world-class facilities to accommodate a wide range of sports and events, including the training of hundred Olympic sports disciplines and Olympic sports teams.
   - The complex will feature Olympic size rinks, sports fieldhouse, training grounds, and support facilities required for various sports disciplines, ensuring athletes have access to top-notch resources, medical advice, and coaching.
   - We will incorporate additional amenities, such as restaurants, retail outlets, and recreational spaces, to enhance the overall experience for visitors and residents.
2. **Strategic Location**:
   - The Multi-Sports complex is strategically located at two major transit hubs. The Stouffville TOD GO Line which services Stouffville and Downtown Toronto and the 140 kms 407 Transitway which services Oshawa, Whitby, Ajax, Pickering, Toronto, Markham, Richmond Hill, Vaughan, Brampton, Pearson Airport, Milton, Mississauga, Oakville, Burlington, and Hamilton.
   - The Stouffville line connects Stouffville to downtown Toronto, enabling convenient access for athletes, spectators, and visitors from both locations.
   - The 407 Inter Regional Transitway, with a spur into Milton and into Pearson International Airport, provides seamless connectivity from Oshawa to Hamilton, attracting a diverse range of attendees from these areas.
   - Six million people live within thirty miles of the Markham's GTA Multi-Sports, Entertainment and Convention Centre.
3. **Collaboration with York University**:
   - York University, slated to open in 2024, will play a pivotal role in supporting this project.
   - The university's expertise in sports medicine and research will complement the complex's facilities, ensuring athletes receive comprehensive care and training support.
   - The close proximity of York University to the Sports, Entertainment, and Convention Complex will foster a fruitful collaboration, enabling research and innovation in sports-related fields.
4. **Expansion of the PanAm Centre**:
   - The PanAm Centre, located adjacent to York University, already boasts impressive facilities that hosted Badminton, Table Tennis, Synchronize Swimming, Waterpolo and Rhythmic Gymnastics during the successful 2015 PanAm Games.
   - As part of this project, we aim to expand the PanAm Centre by adding a second 50-meter pool, a diving tank, and 3m, 5m, and a 10-meter diving tower. PanAm Centre will qualify for Provincial, National and International Swimming Competitions.
   - This expansion will enable the hosting of additional aquatic sports, such as world class, Waterpolo, competitive swimming, and diving competitions, further bolstering the versatility and appeal of the complex.
5. **Economic and Social Benefits**:
   - The creation of this comprehensive destination will attract domestic and international athletes, entertainment enthusiasts, and convention attendees, generating significant economic benefits for Markham and the GTA.
   - Increased tourism and visitors will lead to job creation, revenue generation, and overall economic growth.
   - The GTA Multi-Sports, Entertainment and Convention Complex will become a hub for cultural exchange, community engagement, and entertainment, enhancing the social fabric of the region and promoting a sense of civic pride.

In light of the immense potential and benefits outlined above, I propose that we undertake this ambitious project to create a major multi-sports, entertainment, and convention centre complex destination, accompanied by a 500 room, six-star hotel. This venture will position our region as a premier destination for sports, entertainment, conferences, and conventions, while fostering economic growth, promoting research and innovation, and enriching the lives of residents and visitors alike.

■ CREATING A COMPREHENSIVE SPORTS, ENTERTAINMENT AND CONVENTION DESTINATION VISION FOR MARKHAM:

The MISTA, the Markham Indoor Sports Training Academy Park will encompass a 22-acre indoor sports park, featuring state-of-the-art facilities for various sports, entertainment, and major convention events. This includes an ice park which includes two Olympic regulation ice pads which will serve as the new Eastern Canada home for Canadian men's and women's Olympic hockey teams and a two-hundred metre speed skating track, 10 lane curling rink and 10 lane Lawn Bowling Lanes.

1. **Muccccccccclti-Sport Facilities**: The facility will house a hardwood courts area, catering to basketball, volleyball, gymnastics, pickleball. Additionally, there will be three indoor regulation grass fields for soccer, lacrosse, rugby, frisbee golf, football, field hockey, and soccer. The hardwood floors amenities will support the training needs of the Canadian men's and women's basketball, volleyball, pickleball, table tennis, badminton, and tennis. A sandy area for 3 beach volleyball courts.
2. **Sports Training Amenities**: The MISTA Indoor Sports Training Academy will provide all the necessary sports training amenities to support our young athletes in their development. These amenities will be designed to meet the specific requirements of each sport. The facilities will also support all the community house leagues and organized sports organizations.
3. **Fitness Facility**: A fitness facility will be made available to the general public, encouraging a healthy and active lifestyle for the community.
4. **Sport Medical Training Research Lab and Clinic**: In partnership with York University, the Markham Olympic Sports Training Academy will host a sport medical training clinic and research lab. This facility will provide advanced medical services to athletes, citizens and contribute to cutting-edge research in sports medicine.
5. **Integration with PanAm Centre**: The facilities for volleyball, basketball, pickleball, badminton, and table tennis will be available both at MISTA and the adjacent PanAm Centre, ensuring comprehensive coverage for these sports. Additionally, the MISTA Multi-Sports Training Academy will be utilized by swim clubs, divers, synchronized swimmers, and water polo teams.
6. **Swimming and Diving Facilities**: The addition of a second 50-meter warm-up pool and the inclusion of 3m, 5m, and 10m diving platforms with its separate dive tank at the PanAm Centre will enable the hosting of provincial, national, and international swimming competitions, water polo, diving, and synchronized swimming competitions. This will bring further economic activity to Markham.
7. **Olympic Arena for Performing Arts**: One Olympic arena within the MISTA Olympic Sports Training Academy will be designed to accommodate for concerts and performing arts programs. This arena will have a seating capacity between 15,000 and 20,000 people and will be suitable for hosting Live Nation events and performances, Cirque Soleil shows, Performance on Ice shows and corporate recognition events.
8. **Convention Centre and Hotel**: The MISTA Sports Training Academy will feature a convention/conference centre capable of hosting 3,000 people banquet size events. These facilities will be seamlessly integrated into a 6-Star (500 rooms) hotel, further enhancing Markham's ability to attract national and international events.
9. **Connectivity and Accessibility**: The proposed Markham Multi-Sports Academy will be strategically located near the Stouffville GO Station Hub and future 407 Transitway Hub, ensuring convenient access for residents and visitors. Markham will be a highly accessible destination for technology, e-commerce, business offices, Research and Development and tourism.
10. **Collaboration with Education Institutions**: The MISTA Indoor Multi-Sports Training Academy Park will be adjacent to Markham's York University campus and Bill Crothers Elite Sports High School. This proximity will foster collaboration between the Markham Indoor Multi-Sports Training Academy Park and Entertainment Complex with the educational institutions, providing opportunities for student athletes and research partnerships.
11. **Elite Sports Training Programs:** The Canadian Sports Institute Ontario (CSIO) will partner with York University to run elite sports training programs at the Markham Sports Training Academy. These programs will support aspiring young athletes in achieving their dreams of competing on the world stage, getting the best training guidance possible and at the same time getting a good education.
12. **Cultural Integration**: The proposed Markham Indoor Multi-Sports Training Academy (MISTA) will also be the home to Markham's Central Library, a 50,000 square foot facility. This integration will create synergies between sports, entertainment, and education, creating a well-rounded cultural experience for athletes, students, families, residents, and visitors. It will also serve as a one stop shop for parents bringing children to various events and facilities.
13. **Film Production Potential**: Close to the MISTA Olympic Sports Training Academy, Hollywood North Film City plans to establish a 325,000 square feet super stage capable of doing movies like "Lord of The Rings", "Star Wars" and "Avatar" and contributing to a total studio space of 1,300,000 sq. ft. of high-tech film production. Hollywood North Film City positions Markham as a major motion picture film industries player and also will create 4,000 jobs within the next 4 years. Hollywood North Film City will generate economic growth and create employment opportunities for Markham and GTA residents.
14. **Financing**: The financing for the MISTA Multi-Sports Training Academy will be shared, with the Federal Government and Provincial Government contributing 40% each, and Markham and York Region raising the remaining 20% of the costs. Also, The Business Community will be approached to finance various features of MISTA Sports and Entertainment by using naming rights. This collaborative approach demonstrates the commitment and investment from all levels of government, the business community and the local community.

15. **Greater Toronto Area (GTA) Facility**: Due to its accessibility via the Stouffville GO Transit and future 407 Transitway, the MISTA Indoor Multi-Sports Training Academy Park and Entertainment Centre will serve Markham and the GTA. Six million people are within a 50 kilometers of the Multi-Sports, Entertainment and Convention Centre. Access will be by car, YRT, TTC, GO, Viva Transit, Uber, Autonomous Vehicles, Stouffville GO and future 407 Transitway rail trip, ensuring broad accessibility and engagement.

16. Sustainable Transportation Options:

The proposed Markham Indoor Multi-Sports Training Academy Park (MISTA) will prioritize sustainable transportation options. Autonomous Vehicle transportation will be facilitated within a TOD geofenced campus, dedicated bicycle lanes and well-designed walking trails will connect to the MISTA facility with the surrounding areas, encouraging active transportation and reducing environmental impact.

The creation of a vibrant Downtown Markham City Centre Hub, centered around the indoor (MISTA) Markham International Multi-Sports Academy, Entertainment Center, and Major World Class Convention facilities and 6-Star (500 room) Hotel, will provide a comprehensive platform for sports, entertainment, culture, conventions, and economic growth. The proposed complex and amenities will support elite athlete training, community engagement, and hosting of local, regional, provincial, national, and international events.

We will be requesting financial support and commitment from the Federal and Ontario Government, Markham, Toronto, and Stouffville Municipalities, stakeholders, community members and residents bring this vision to fruition. Now is the time to start planning for the world class Markham International Multi-Sports Training Academy Park and Entertainment Hub, Convention Centre and 6-Star Hotel destination. Markham Centre will become a thriving and inclusive community that attracts visitors, fosters community pride, and contributes to the overall well-being and economic growth of Markham and the GTA. Markham will be the home to many Olympic athletes and national Olympic sports teams.

STOUFFVILLE GO TRANSIT CORRIDOR:

The Stouffville line is a GO Transit Commuter rail line that runs between Union Station, Toronto, East York, Scarborough, Markham, and Stouffville, Ontario. The line serves communities in the Stouffville Rail Corridor. Majority of its ridership consists of commuters traveling to and from downtown Toronto's Union Station for work. Nearly all of the Stouffville GO Line Stations are parking lots. A corridor feasibility study is needed to transform the Stouffville line from a GO Commuter Line to a completedestination TODs Corridor Line.

Metrolinx GO electrification program is for 25,000 volts, which excludes Light metro rail that runs on 750 V DC or 1,500 V DC. There is a lack of strategic comprehensive TOD planning at the corridor level. It is crucial to create complete destination Transit Oriented Communities at each station, big or small.

It is important to plan for major retail, schools, office, sports, entertainment, theatres, parks, convention, and

29A-BucksMont_Indoor_Sport_Center.jpeg

29B-Adaptive_Spire.jpeg

conference centers that are located in the most suitable locations in the corridor line to attract more ridership, jobs, shopping, entertainment, commerce, and businesses.

The population of the Greater Toronto Area is expected to grow by 5 to 6 million people over the next 40 years, and the Stouffville GO Corridor can play a key role in accommodating this growth by adding an additional 400,000 condo units in GO TOD Corridor stations by 2060 which requires careful planning now and coordination between various stakeholders, including federal, provincial, and local governments, as well as private sector partners and residences.

TOD are places that, by their design, allow people to drive less, walk, cycle, and take transit more. TODs concentrate higher-density, mixed-use, human-scale development around frequent transit stops and stations. TODs also provide well-connected and well-designed networks of streets, creating walking and cycling-friendly communities focused on frequent transit. Communities built in this way have proven to be particularly livable, sustainable, and resilient places.

1. TODs are a way to build homes (units) without increasing urban sprawl or exacerbating air pollution and traffic congestion; and
2. Secondary Plans using TODs principles are being developed for four stations in Markham, with population/jobs as follows:
   - Mount Joy 28,000 people 12,750 jobs
   - Centennial 50,000 people 22,750 jobs
   - Mkm Ctr 150,000 people 60,000 jobs
   - Milliken 24,200 people 11,000 jobs
3. Other stations and TOD locations are planned along the corridor, including Major McKenzie Drive, Denison Street, Ellesmere Road, Lawrence Avenue, Elgin Mills Road, 19th Avenue; Highway 7, 16th Avenue, 14th Ave.
4. Transit oriented development make it possible to operate an efficient, cost-effective transit service. Making communities more transit-oriented is a key goal of land use planning and transit planning.
5. To address the growing demand for transportation options in the region, Markham has always been interested in transforming the Stouffville GO line into a transit oriented development (a complete destination Light Metro Rail corridor that will serve as a destination in its own right, rather than simply a means of commuting to Union Station in downtown Toronto).vThe Stouffville GO Transit Line currently operates as a commuter line, with limited amenities and destinations for residents and visitors alike. It has the potential to be transformed into a complete destination transit oriented development' corridor that will attract more housing, residents, businesses, jobs, sporting, entertainment and cultural facilities, visitors to the area, thereby creating more economic opportunities and improving the quality of life for the people who live, work, play, shop, entertain, and visit along the corridor.
6. Complete Destination TODs have significant destination amenities and functions including:
   - High concentration of jobs,
   - Medium and high-density residential,
   - Retail, Restaurants, Cafes, Grocery Stores, Drug Stores, Dry Cleaning Stores, etc.
   - Sports Arenas, Community Centers, and Fieldhouse Venues,
   - Entertainment and Performing Arts Theatre Venues,
   - Solution s for the first mile/last mile including autonomous vehicles in a geofenced area,
   - Banks, Financial Services, Legal Offices,
   - Locate Federal, Provincial and Municipal Services in major destination stations along the GO corridor,
   - Locate Markham's proposed Central Library at the Unionville GO Station in the Markham Center,
   - Health and Medical Facilities, Health Care Offices, Day Care,
   - Universities, Community Colleges, Multi-Level Public/Separate Schools, and Education Facilities,
   - Urban Vertical Farming located at each TOD Stations,
   - Level 3 DC Fast Chargers for electric vehicles (EVs) that do not require any grid upgrades,
8. It is important that these destination TODs and the major attractions therein, are located at the most suitable locations in the corridor to attract more homes, jobs, riders, visitors, and businesses.
9. This requires a holistic, multidisciplinary, and comprehensive strategic planning of the entire corridor for transportation, land-use, urban design, economic development, major destination facilities, job creation, parks, and community engagement.
10. Markham Centre's Unionville GO Station area has the potential to become a premier destination for multi-sports, entertainment, conventions, business, shopping, and cultural experiences; and

A COMPLETE MAJOR DESTINATION PLANNING AT THE UNIONVILLE GO TOD STATION – "MISTA":

1. Envisioned as a major indoor sports park, entertainment complex, convention center destination attraction for the City of Markham and the surrounding GTA Region, MISTA is a truly dynamic project and development opportunity.
2. MISTA is the emerging flagship of Markham Centre with potential for high order destination use such as Sport, Multi-media Entertainment and Cultural Venues, Performing Arts Centre, Convention Centre, Six Star Hotel and World Class Retail, Class A office buildings, first class residential condo units, major multimodal Metrolinx transit hub and the proposed Markham Indoor Sports Training Academy Arena Park ("MISTA").
3. MISTA is intended to provide the City of Markham, York Region, Toronto, and the GTA with world class sporting events, entertainment, conventions, trade shows, dining, shopping, commercial offices, residential, and an integrated major transit hub.
4. Highlighting the importance of creating major complete destinations at TOD stations on LRT lines to foster economic development and achieve two-way, all-day, high traffic ridership. Emphasizes the need for specific activities to generate 100,000 two-way all-day ridership trips at the Unionville GO station, including a major indoor multi-sporting park, entertainment centre, convention activity, with a 6-Star hotel, high-tech business office activity, central library, York University, city-wide community center, and major retail center activity. It also acknowledges that all proposed TOD stations on the Stouffville line are within a 30-minute reach and that all future 407 Transitway TODs will all be accessible.
5. To realize the vision of Transit Oriented Communities with major complete destinations, several factors need to be considered. These include the availability, reliability, and accessibility of public transportation, effective marketing and promotion of transit services, supportive urban planning, and land use policies that encourage transit-oriented development. Additionally, creating a culture that embraces public transportation as the preferred mode of travel is essential.
6. The plan to build 60,000 condominiums at the Markham Centre TOD, accommodate 150,000 people, and provide 60,000 jobs in the same area demonstrates the scale of development and potential economic impact. This integrated approach, combining residential, commercial, and recreational spaces within the TOD, promotes walkability, reduces car dependency, and enhances the viability of public transportation.
7. That the integration of these activities with the transit-oriented development where mixed-use developments are built around transit hubs, can further enhance ridership by providing convenient access to transportation services for residents, employees, and visitors alike.
8. The success of creating high and fostering economic development depends on the collaboration and support of various stakeholders, including government authorities, urban planners, transportation agencies, private developers, and community organizations. Together, they can contribute to the realization of sustainable, thriving, and connected communities that prioritize public transportation as a key component of their transportation network.

Figure 4. **Inside Richmond Speed Skating Olympic Oval**

1. Sports Shop Retail Store
2. 20,000 sq.ft. fitness centre of strength & cardio
3. 4-storey Climbing Wall
4. 2 Olympic-sized ice arenas
5. 18 Badminton Courts or
6. 10 FIBA regulation Volleyball Courts or
7. 10 FIBA regulation Basketball Courts or
8. 3 FIFA regulation indoor Soccer Fields
9. 16 international-sized table Tennis Tables or
10. 10 Pickleball Courts or
11. 3 Beach Volleyball Courts
12. 200 metres, 5-lane Training Track
13. 110 metres, 5-lane Sprint Track
14. 10 meeting rooms
15. 2 Yoga Studios and Infrared Sauna
16. Indoor rowing and Paddling Centre
17. Group Rowing and Spinning Studio
18. Kinesis core conditioning room
19. Mind/Body Studio
20. Group Fitness Studio
21. 10 Lanes Lawn Bowling
22. 10 Lane Curling Rink
23. 2 Field Hockey Field
24. 10 Lanes Curling Arena
25. Group Fitness Studio
26. Performance Training Centre
27. 8 Hardwood Courts
28. Personal Training Studio
29. Batting and Golf Cages
30. Rehabilitation care & sport medicine clinic
31. CSIO laboratory & Admin offices
32. Sports & Family practice medical clinic
33. Child minding room
34. Legacy Hosting Suite
35. Event support spaces
36. Olympic Riverside Plaza
37. Diving Tank with 3m, 5m, 10m diving tower
38. 50 Meter, 10 lane warmup pool
39. 50,000 sq ft Markham Central Library
40. 100,000 sq. ft. Urban Vertical Farming on GO roof

Figure 5. **Richmond Olympic Oval**

Figure 6. **Rock Climbing Wall**

Figure 8. **Richmond Olympic Oval Floor Layout**

Figure 7. **Gymnastics Floor Layout**

Figure 9. **Gymnasium**

Figure 10. **Olympic Hockey Arena**

Figure 11. **Basketball, Volleyball, Lacrosse, Pickle Ball**

Figure 12. **Basketball Court and Ice Arena**

THE STOUFFVILLE GO TRANSIT CORRIDOR LINE'S "NEW ECONOMY"

Multi-Purpose Venue: Construct a state-of-the-art multi-purpose sports park venue with a flexible design capable of hosting sports events, concerts, large conventions and performing arts shows. The venue should accommodate different seating capacities and configurations to attract major events like Live Nation, Cirque Soleil, and Stars on Ice, etc.

Sports Facilities: Develop world-class sports facilities including two Olympic-size rinks, hardwood floors sports venues, grass fields sports, and PanAm 50 metre competition pools. This facility will be capable of hosting many events of the Olympics Games, PanAm Games, Commonwealth Games, and the World University Student Games. Also, the facility will be busy hosting local, regional, provincial, national, and international sporting games, corporate and political events.

Recreation and Wellness: Incorporate recreational amenities such as parks, trails, and fitness centers to promote an active and healthy lifestyle. Provide accessible and well-maintained facilities to encourage community participation in sports and physical activities.

Entertainment District: Create a vibrant entertainment district surrounding the sports facilities, featuring a diverse range of options such as restaurants, bars, cinemas, arcades, and shopping malls. These districts should provide a lively atmosphere for visitors to relax, socialize, and enjoy various forms of entertainment.

Cultural Integration: Integrate cultural elements into the sports and entertainment experience, celebrating the diversity of the community. Install art installations, host cultural performances, and organize festivals that showcase local talent and traditions, fostering community pride and engagement.

Technology Integration: Embrace innovative technologies to enhance the visitor experience. Implement digital ticketing, interactive displays, augmented reality experiences, and seamless connectivity to create an immersive and convenient environment for attendees.

Sustainability and Green Spaces: Design the destination with sustainability in mind, incorporating green spaces, energy-efficient infrastructure, and sustainable transportation options. Prioritize environmental stewardship and provide opportunities for people to connect with nature.

Collaboration and Partnerships: Forge partnerships with sports teams, entertainment companies, local businesses, and community organizations to create a collaborative network. These collaborations will attract major sporting events, secure popular entertainment acts, and foster a thriving local economy.

Marketing and Promotion: Develop a comprehensive marketing and promotion strategy to raise awareness of the destination sports and entertainment offerings. Utilize traditional and digital marketing channels, social media platforms, and strategic partnerships to attract visitors from far and near. Central Library and Sports Centre Integration: Locate Markham's 50,000 sq ft central library within the sports and entertainment district. Create a one-stop shopping for sports, recreation and learning for parents with children involved in multiple sports, providing convenience and accessibility.

Transit Accessibility: Develop the sports and entertainment district at the apex of two major rail transit lines, the Stouffville TOD transit corridors and future major cross-town high-speed TOD 407 Transitway and 407ETR Highway corridor. This will ensure convenient transportation options for visitors and residents alike in all four directions.

Population and Job Growth: With the expectation of 150,000 residents (60,000 condo units) and 60,000 jobs located just in the Markham Centre TOD, the destination multi-sports and entertainment park centre hub will provide essential services and recreational opportunities for the growing local, city and GTA population.

Regular Evaluations and Adjustments: Establish a process for regular evaluations and adjustments to the vision, ensuring its ongoing relevance and success in meeting the evolving needs and desires of the community.

All TODs Station Areas: will be 3D spatial digitally planned and modelled.

Engage World-Renowned Consultants: Team made up of an Architect, TOD Planner, Sports and Entertainment Experts to masterplan the Markham's Multi-Sports, Entertainment and Convention Centre Park Complex.

Define The Concept of a Complete Destination Station Area and determine the specific amenities that should be included. This may involve considering features such as retail spaces, recreational areas, bicycle parking, pedestrian connectivity, and accessibility for people with disabilities. A complete destination TOD depends on local priorities, community values, and a comprehensive assessment of the options. It can be helpful to involve stakeholders such as local authorities, transit authorities, and community members to gather different perspectives.

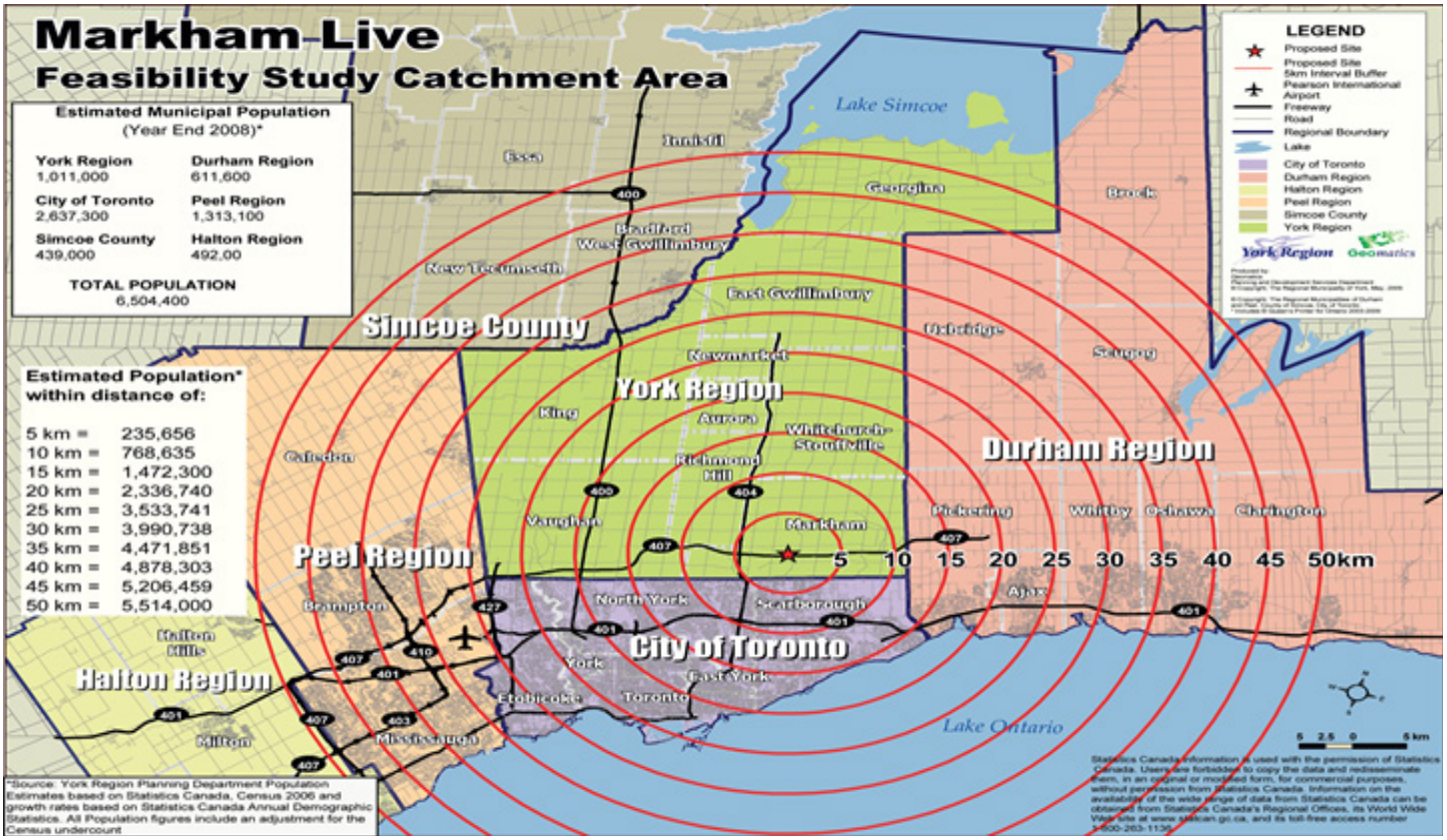


Figure 13. **Markham-Live Feasibility Study Catchment Area**

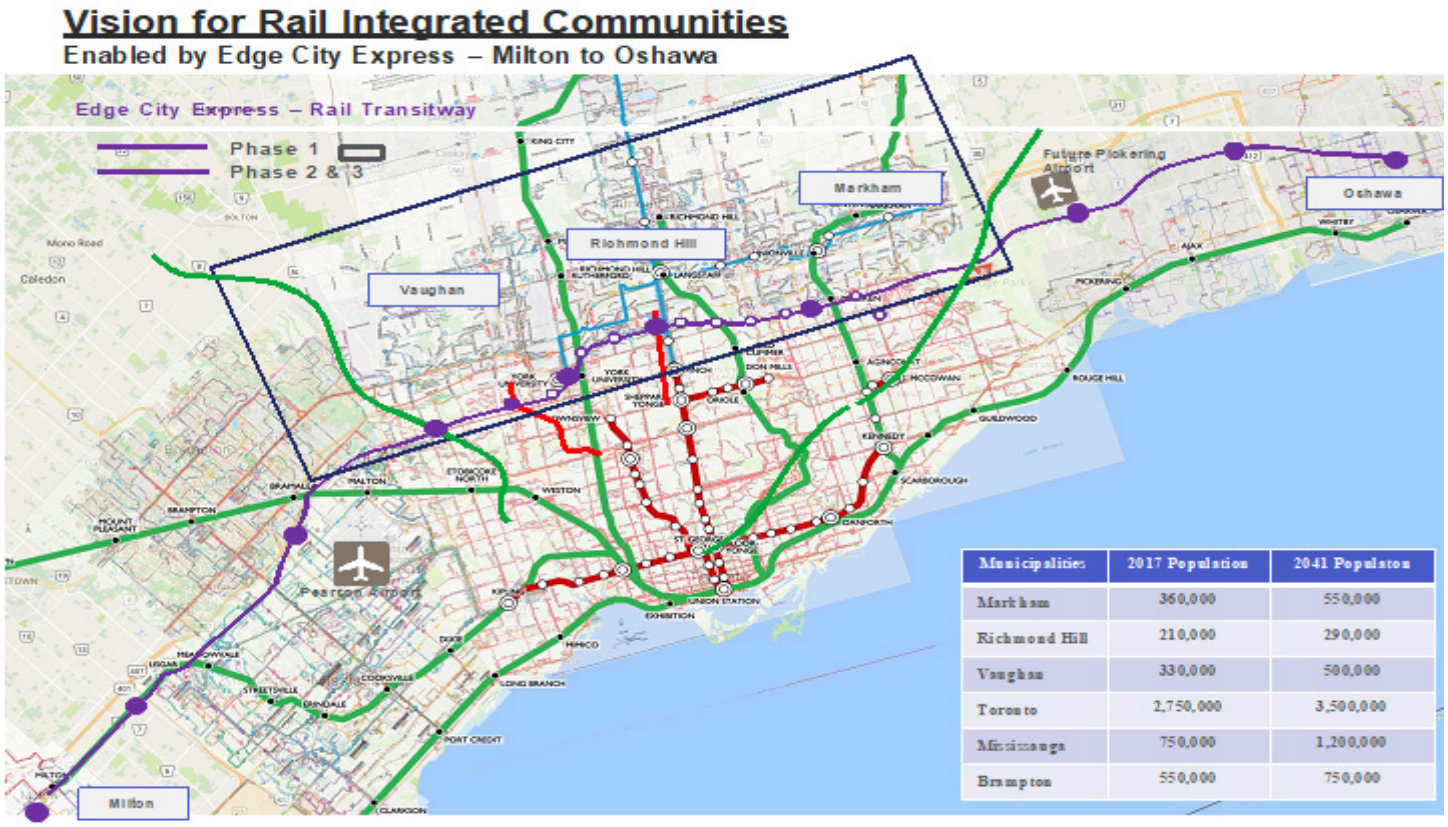


Figure 14. **Vision for Rail Integrated Backbone Network and Transit Oriented Development**

■ PLANNING COMPLETE DESTINATIONS ON STOUFFVILLE CORRIDOR GO LINE:

Creating a major sports, entertainment, convention center, 6 Star hotel and High-Tech Office Complex destination at a major rail TOD station area, will be an exciting and dynamic project. Such a development will attract visitors across the GTHA, boost the local economy, and enhance the overall appeal of the area:

1. **Feasibility Study**:
   - Conduct a comprehensive feasibility study to assess the viability and potential success of the project.
   - Evaluate the market demand, economic impact, and financial viability of the center.
   - Consider the available infrastructure, transportation access, and site suitability.
2. **Conceptualization and Design**:
   - Develop a concept and vision for the sport, entertainment, convention center, 6 Star Hotel and Office Complex.
   - Engage architects, urban planners, and design professionals to create a master plan for the development.
   - Consider seating capacity, event spaces, exhibition halls, amenities, parking facilities, and accessibility.
3. **Stakeholder Engagement**:
   - Engage with Federal, Provincial, and local government authorities, transit operators, and relevant stakeholders.
   - Seek input from the community, businesses, and potential users to ensure their needs and concerns are met.
   - Collaborate with rail TOD station operators to integrate the center seamlessly with the transit infrastructure.
4. **Regulatory and Environmental Considerations**:
   - Identify and comply with local regulations, zoning requirements, and environmental standards.
   - Conduct environmental impact assessments and implement sustainable design and construction practices.
   - Obtain the necessary permits and approvals from relevant authorities.
5. **Funding and Financing**:
   - Develop a comprehensive financial plan, including capital costs, operational expenses, and revenue projections.
   - Explore funding sources such as public-private partnerships, grants, sponsorships, and private investments.
   - Consider long-term sustainability and revenue generation strategies.
6. **Community Integration**:
   - Integrate the destination into the local community by engaging with businesses, residents, and organizations.
   - Foster partnerships with York University, Seneca College, local educational institutions, charities, and community groups to provide opportunities for involvement and mutual benefit.
7. **Construction and Development**:
   - Hire qualified contractors and project management teams to oversee the construction process.
   - Ensure compliance with building codes, safety regulations, and quality standards.
   - Monitor progress, manage timelines, and address any unforeseen challenges during the construction phase.
8. **Operations and Management**:
   - Establish a management team or partner with experienced operators to handle day-to-day operations.
   - Develop marketing and promotional strategies to attract sporting events, conferences, and entertainment acts.
   - Implement efficient ticketing, security, and facility management systems.
9. **Integration with Rail TOD Station and Area:**
   - Collaborate with the rail TOD station operator to integrate the center seamlessly with the transportation hub.
   - Design pedestrian walkways, signage, and wayfinding systems to guide visitors between stations and the center.
   - Consider convenient access points, public transit connections, and commuter parking and event attendees.
10. **Ongoing Evaluation and Adaptation**:
    - Continuously monitor and evaluate the center's performance, financial sustainability, and user satisfaction.
    - Collect feedback from visitors, event organizers, and the local community to identify areas for improvement.
    - Adapt the center's programming, facilities, and operations based on changing market trends and user demands.

The specific details of Markham Live project will depend on the location, local regulations, and stakeholders involved. Engaging with both Federal and Provincial Ministers of Sports, Canadian Sports Institute Ontario (CSIO), professionals in urban planning, architecture, international sports planning, and event management to refine your plan and ensure its success.

- Existing Stations
- Approved Stations
- Aspirational Stations

Figure 15. **Reimagining The Stouffville GO Corridor into an LRT Subway Type Services Line with 28 Stations**

Figure 16. **3D Development Concept of Markham Live**

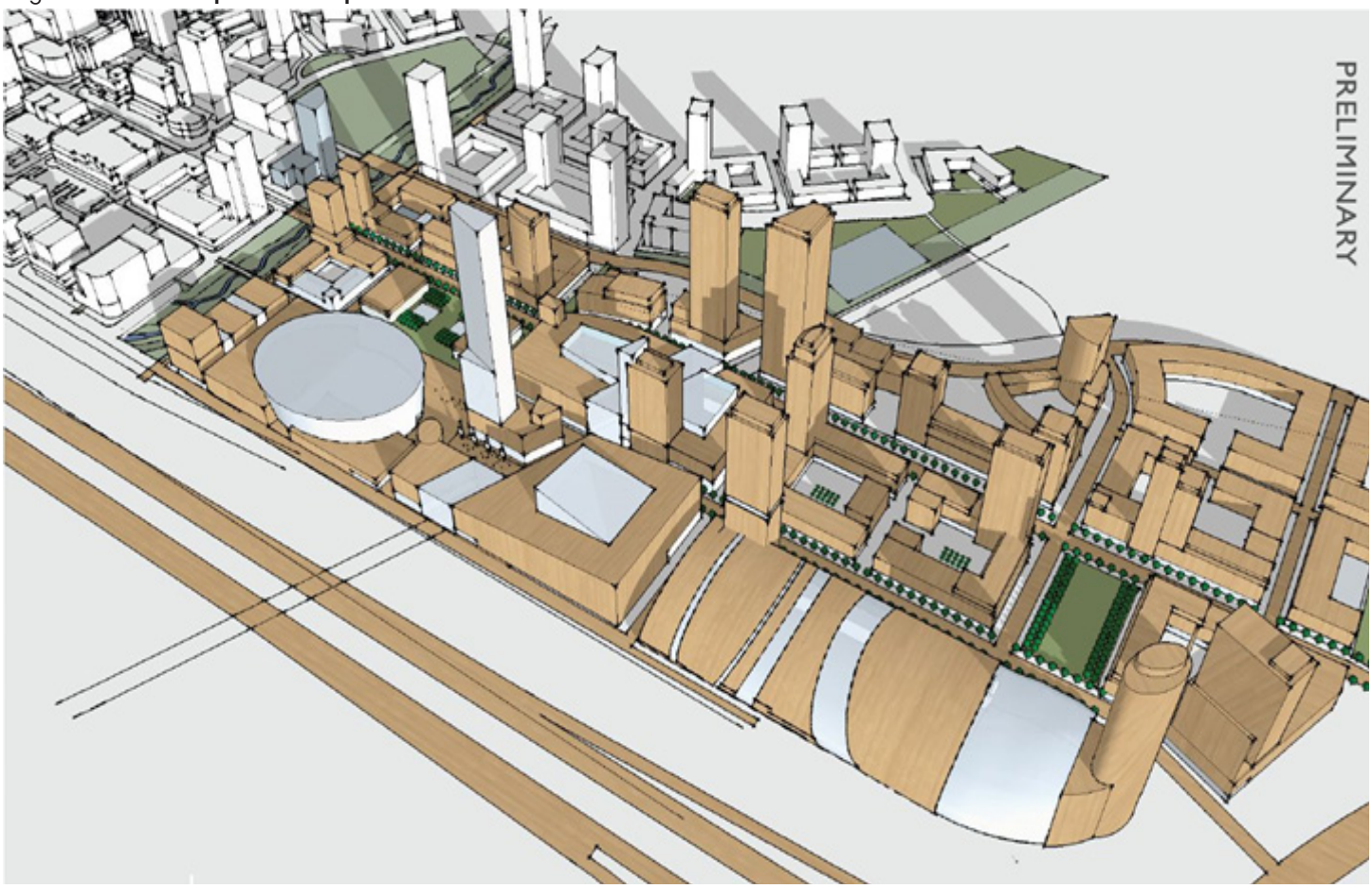


Figure 17. **Major Sports Training, Convention, and Entertainment Centre at Unionville GO Station**

Figure 18. **Markham Internation Sports Training Academy at night (MISTA)**

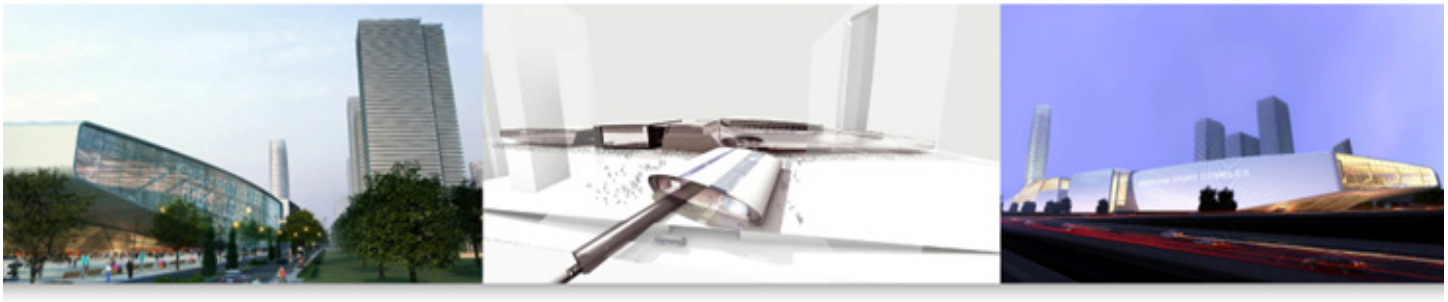


Figure 19. **Markham International Sports Training Academy (MISTA) Site Plan**

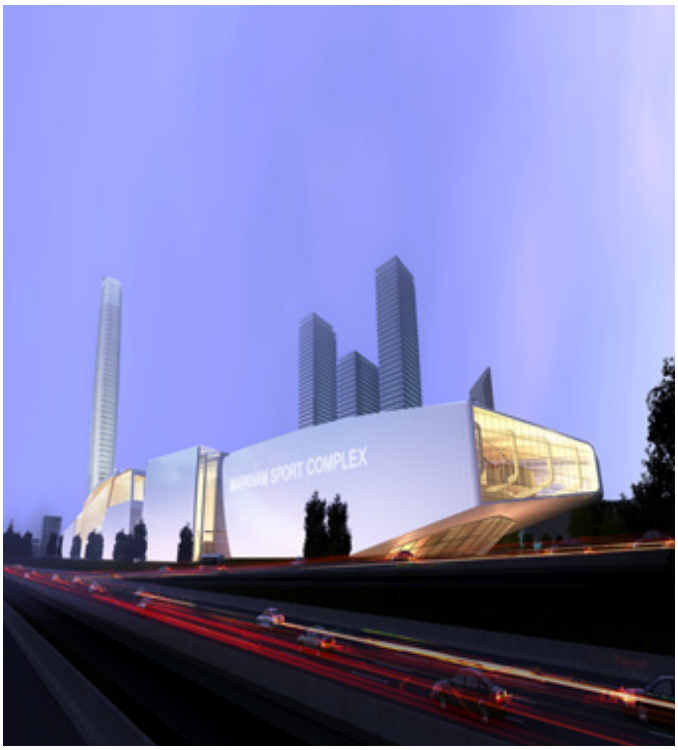


Figure 20. **Looking North from the 407 Highway**

Figure 21. **Looking West from the YMCA Boulevard**

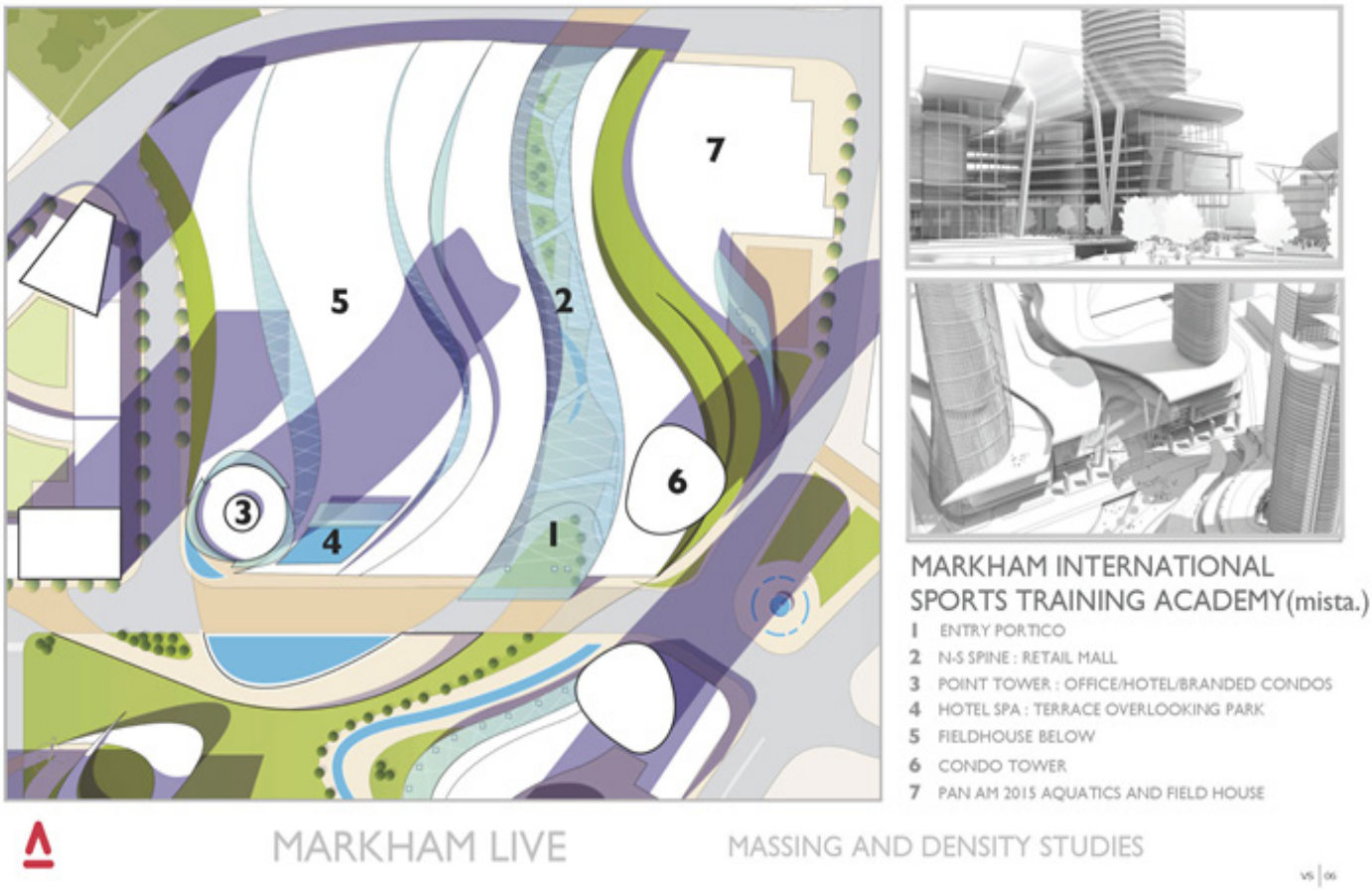


Figure 22. **Aerial View of Markham International Sports Training Academy (MISTA)**

MISTA ASPIRATIONAL – MUST DO A CORRIDOR ECONOMIC STUDY

MISTA is a mixed-use sports, entertainment, performing arts, hospitality, and major office complex within the emerging Markham Centre.

This 1,500,000-square foot project includes:

1. 70 stories Towers (Six-star world class) Hotel and Convention Centre
2. 6,000-7,500 seat Multi-purpose Entertainment Centre and Arena
3. 200,000 square feet Trade Centre (indoor field house)
4. 3,000 seat National Aquatic Centre
5. Olympic Training Academy anchored on top of the (2,000 GO Station parking space) structured parking containing permanent Olympic training facilities for gymnastic, badminton, table tennis, basketball, volleyball, combative sports, a fitness training center, health, and wellness center.
6. Major transit anchor hub with major retail (i.e., Like the Eaton Centre) and 100,000 square feet of transit-related halls, kiosks, and platform space.
7. Performing arts theatres
8. Class A commercial Office Complex

COMPONENT DESCRIPTION OF "MARKHAM LIVE"

1. Hotel and Convention Centre

The 70-storey luxury Hotel will be operated by one of the world's best known hospitality companies and will be unlike anything the region has ever seen. It will be programmed with a 2000 seat ballroom, a spa, an indoor pool, and several restaurants. Sky lobbies with privileged views toward Lake Ontario and the city skyline as well as the pastoral fields of Markham Stouffville will render it this a destination location.

The Convention Centre and supporting facilities account for over 300,000 sf of gross floor area and will contain break out space, loading facilities comparable to currently proposed convention centers in Ottawa and Vancouver. It will also be supported by a conferencing facility. The main space will have a 35-foot-high clear space to accommodate the widest variety of convention and conferencing possibilities.

2. Multi-Purpose Entertainment Centre

The Multi-Purpose Entertainment Centre will be able to accommodate a regulation size NHL rink and competitive facilities including change rooms, showers, administration office, ticketing area, restaurants, bars and 20,000 fixed spectator seats. The project will be designed to accommodate large scale musical performances, skating events such as "Stars on Ice", other events such as Cirque de Soleil and a wide assortment of other possibilities.

3. Trade Centre / Indoor Field house

The Trade Centre and Indoor Field house has been located adjacent to and West of the Hotel / Convention Centre to take advantage of mutual and shared supporting facilities such as loading. Additionally, the Trade Centre will be able to take spill off from the Convention Centre and vice versa. This will allow the opportunity for larger scale shows to exist when possible.

4. National Aquatic Centre

The National Aquatics Centre will be an Olympic level fully supported centre for sport development and competition. It will have one 10 lane 50 metre competitive pool, one 50 metre training pool, a ten-meter diving tank, warm up pools as well as a full array of fitness rooms, lockers, showers, administration offices as well as an aquatics therapy centre. The competition pool and diving tank will have 5000 spectator seats.

5. Olympic Training Centre

This will be an international level centre dedicated to the development of athletes. It will house a state-of-the-art sport medicine clinic, fitness centre and sport psychology clinic. In addition, it will also house international standard venues for Basketball, Volleyball, Gymnastics, and the full array of combative sports.

Major Transit Hub for 407 Transit way, GO-Transit and YRT/Viva

Markham has been designated by Metrolinx as a "Regional Transit Hub". This term has very specific expectations. With 300,000 square feet of retail and 77,000 square feet of transit-related halls, kiosks, bus loading bays, platform space and parking for 2500, it will connect the lines of at least four different transit groups, loading and unloading 100,000 people a day from the moment it is complete in 2027 and growing to 200,000 a day within five years. It is expected to become a crucial hub of activity for Markham and benefits a regional centre that is anticipated to grow proportionally more than that anticipated by the City of Toronto for the next 10 years.

In concert with the Markham Sport Complex and the Markham Hotel and Convention Centre, "Markham Live" simply seeks to redefine Markham and York Region.

6. Major Retail/Hospitality on top of hub

7. Performing Arts Centre (6,000-8,000 seat arena)

8. Major Commercial Office Complex

a. Federal building
b. Provincial building
c. Sports Admin and Sports Science building
d. Regional building
e. 2 - General Purpose Office buildings

■ MARKHAM MULTI-SPORTS AND ENTMARKHAM CENTRE

It will also be the home of the Canadian Olympic Sport

Training Academy which will house world class training facilities.

1. National Aquatics Centre complete with a 50-meter competition and a 50-meter warmup pools and a diving tank with seating for 3,000+ people
2. A competition level gymnastics centre
3. An Olympic standard table tennis and badminton training centre
4. An Olympic standard basketball and volleyball training centre
5. A Combative Sports Training Centre
6. An indoor 200-meter track and indoor field house (soccer, tennis, field hockey, football) centre with spectator seating for 6000.
7. Olympic Sport Fitness Training Centre
8. Health and wellness center

There are multiple challenges to the design of this ambitious project. This includes knitting a much larger scale project into a community with a finer grain of scale and massing. We propose to achieve this balance by aligning the bulk of the project along the North side of highway 407. This achieves two things. It buffers a regional scale infrastructure in the form of the highway from the community while simultaneously providing an opportunity to develop an edge to the community that is lively, social, and urbanely animated.

The north side will be up against a green pedestrian road lined with trees, cafes, restaurants and other forms entertainment and amenities both within the complex and proposed across the road within a podium at the base of a significantly dense program of residential and commercial towers.

As a regional hub, it will connect the lines of at least four different transit groups, loading and unloading 100,000 people a day from the moment it is complete in 2027 and growing to a projected 150,000 – 200,000 a day within five years. It is expected to become a crucial hub of activity for Markham, York Region and befits a regional centre that is anticipated to grow proportionally more than that anticipated by the City of Toronto for the next 10 years.

MARKHAM'S COMMONWEALTH GAMES BID: "CREATING OUR FUTURE TODAY"

With the motto "Creating Our Future Today", will be the first major international sporting games hosted by York Region.

From the outset, we are striving to foster long-term benefits for the residences of Markham, York Region, Toronto and the GTA population and economy and adopting a carbon free transit games.

The Goals of The Commonwealth Games Bid are:

1. Provide Land Use that Optimizes the Investment in Transit
2. Provide a Complete Destination Transit Corridor and Complete TOD Communities
3. Create a Walkable, Cyclable Communities Corridors Seamlessly Linked to Public Transit
4. Focus Intensity and Community Activity at Stations and other Areas
5. Provide a Range of Housing Choices and Affordability
6. Balance City-Wide and Regional Goals with the Community and Its Context
7. Ensure Job Space and Diversity
8. Increase public participation in sports by locating sports facilities in Transit Oriented Development stations.
9. Strategically plan major Sporting Facilities in connected integrated TOD Network Corridors
10. Ensure environmental sustainability, economic opportunities, quality-of-life, and a sense of community.
11. Frequent, predictable, convenient reliable transit rivals total trip time and cost in transit ridership's priorities and is essential to capturing ridership.

The 2030 Commonwealth Games legacy is the easy accessibility to high performance sporting facilities by locating all sporting facilities at major GTA 407 rail transitway and Metrolinx GO Transit Corridors ensuring greater regional participation in amateur sports. At the same time, recognizing the role that the Games will play in bringing all our diverse communities together, with a particular focus on driving economic development, jobs, social change, accessibility, and affordability to participate in the sports of their choice. Also encouraging individuals to volunteer their time, expertise, and skills for the benefit of others.

Transforming Markham, York Region, Toronto and the GTA:

Hosting the 2030 Commonwealth Games presents the opportunity to locating major sporting facilities to the emerging integrated GTA Rapid Transit Rail Network. Metrolinx GO Rail Transit Corridor stations are areas which historically are just parking lots today, and the GO rail transit corridors ridership is greatly underperforming.

The Markham Sports and Entertainment Park will become a dynamic new heart for Markham and the GTA and will play a major role as a region facility in the transformation of Markham Centre. All the permanent Games venues in the Sports and Entertainment Park will be operational, generating jobs for local people, and staging high-profile events.

The park is a place where people live, work, play, learn and visit. It will be managed by a City of Markham entity, which will be formed before the 2030 Commonwealth Games, and it will generate opportunities for local people, drive innovation and economic growth in Markham, Toronto, York Region and the GTA.

It will be the home to many high-performance sport competition venues, a playground for many local, and regional house leagues and international visitors'

tournaments.

ERTAINMENT CENTRE

The Federal and Provincial Governments should each fund 40% of the cost for the complex.

3,000 parking spaces provided with one level of underground parking and one level at grade where a service and amenity level is located. The third level contains the following completion of the Markham Sports and Entertainment Complex. The main sports hall will be split into three areas, which include:

The Ice Zone - The ice zone consists of 2 Olympic ice hockey rinks with international dimensions

The Court Zone - Consists of 10 basketball courts and 3 Beach Volleyball Courts

The Field Zone - 2 Indoors regulation soccer fields.

The Water Zone – PanAm Centre Pool will get a 50-meter warmup pool and dive tank with a 3m, 5m and 10m platform tower

The track and field zone consists of a six-lane 200 metre (660ft) oval running track and six-lane 110metre (360ft) sprint track.

A Climbing Wall is installed at the Track Zone, which offers forty climbing routes.

Multi-Sports and Entertainment Centre: can be configured various ways to hold:

Commonwealth/Olympic/PanAm Sports

- 10 Badminton Courts, or
- 10 FIBA Volleyball Courts or,
- 10 FIBA Basketball Courts, or
- 10 Pickleball Courts, or
- 16 Table Tennis Courts, or
- 3 Beach Volleyball Courts,
- 3 indoor Soccer/Field Hockey/Rugby 7 fields,

Commonwealth/Olympic Sports

- 10 Lawn Bowling Lanes
- 10 Lane Curling Arena
- 2 Olympic Size Ice Rinks
- 3 Beach Volleyball Courts,
- 2 indoor soccer fields, or

INSIDE MARKHAM SPORTS FACILITY

1. Within the oval running track is areas for in-field athletics.
2. Markham Sports and Entertainment Complex Estimated Indoor Park – 50,000 sq metres or 500,000 sq ft of indoor parkland
3. Markham Parking – 3,000 paid underground parking spaces.
4. The Markham Sports Facility will be created as a Municipal Capital Facility when open, with the sole purpose of operating a Sports and Entertainment Facility.
5. Overall, the Markham Sports and Entertainment Park is a very strategic and critical destination facility in the Metrolinx Integrated Rail Transit Network. The Sports and Entertainment Park has found its place within the GTA market, serving the region as a sports, culture, entertainment, and tourism hub as well as complementing the City's excellent network of community centers and other recreation facilities, which continue to thrive.
6. The City of Markham Sports Park is a 500,000-square-foot structure designed as a dual-use building, housing not only the Commonwealth Sports venues for the 2030 Commonwealth Games, but also, after the Games, becoming a permanent legacy facility functioning as an International Centre of Excellence for Sports, Entertainment and Wellness.

The Canada Line, and the land uses around it, play a pivotal role in Vancouver's future. The Cambie Corridor is a key component of a sustainable, livable city of neighbourhoods, connected to convenient, viable transportation alternatives. The Corridor meets residents' needs with places to live, work, shop, play and feel part of a community.

Rapid transit is a catalyst for significant change in the city and the region. The 2010 Olympics showed Vancouver what was possible – as people chose public transit, the Canada Line saw weekday service increase by 118%, from 105,000 to 228,000 boardings a day, resulting in approximately 3.9 million boardings overall during that two-week period. This plan will build upon that success, linking land use, built form, transportation infrastructure, district energy systems, aff ordable housing, and other elements of sustainability to make the distinct neighbourhoods along Cambie Street an even better place to live.

As Vancouver continues to grow and develop, our collective success and well-being will depend on our ability to respond to four key Council priorities:

- Environment and Sustainability
- Strong, Safe and Inclusive Communities
- Homelessness and Affordable Housing
- Creative Capital and a Growing Economy

The plan for the Cambie Corridor seeks to address these priorities, building on policies, plans and incremental decisions that have helped us move toward a city of sustainable neighbourhoods and inclusive, aff ordable, mixed use communities supported by a sustainable and diverse economy.

I believe we can create the same magic for the GTA Region by creating the 2030 Commonwealth Transit Games with suberb integrated transit and venue planning.c

Figure 23. **Richmond Multi-Sports Park**

Figure 24. **Richmond Olympic Speed Skating Oval at Night**

Figure 25. **Richmond's 400 Speed Olympic Speed Skating Oval**

AUTONOMOUS VEHICLES:

PROOF OF CONCEPT "AUTONOMOUS VEHICLES PILOT" AT THE UNIONVILLE TOD GO STATION

" PLAN THE FUTURE AS THAT IS WHERE WE ARE GOING TO SPEND THE REST OF OUR LIFE"

APPENDIX 4

Notice of Motion: Autonomous Vehicles (AV) Proof of Concept Pilot at the Unionville GO Station
Moved by: Regional Councillor Jim Jones
Seconded by: Councillor Keith Irish

AUTONOMOUS VEHICLES

Figure 1. **Mobility Forus - Autonomous Mini-Bus**

■ AUTONOMOUS VEHICLES ARE THE FUTURE

Increasing urbanization worldwide looks likely to be a trend to continue in the foreseeable future. It brings in many complexities in energy consumption, transportation, housing, and, in more general, living experience of the urban dwellers in terms of pollution, waste, noise, congestion, etc. At the same time, these challenges push new opportunities to the forefront in new innovation ecosystems. One such promising framework is the paradigm of Smart Cities, where the power of computational techniques is utilized for more optimized use and management of city's assets to improve urban living. An important subsystem for the success of Smart Cities is its transportation infrastructure by means of an intelligent transportation system (ITS). The defining characteristic of ITS is its data-driven methodology.

As a result of demographic shifts worldwide, the density of urban areas is swiftly increasing. With some estimates, including recent UN reports, close to 70% of the world populations is expected to live in urban areas and big cities by 2050. This trend for greater urbanization brings about many problems in housing, transportation, energy, and manufacturing in terms of pollution, waste, noise, congestion, etc.

At the same time, these issues are giving rise to new innovation ecosystems as facilitators. One such framework in these developments is the paradigm of the Smart City (SC). The defining and distinguishing characteristic of SCs is the ubiquitous integration and exploitation of information and communications technologies (ICT) in the urban areas and by heavily resorting to computational, control, and optimization methodologies. Major goals of SCs include raising standards of living, increasing more efficient use of resources, providing convenience, improving environmental conditions, reducing crime, etc.

It is generally agreed that one of the most important subsystems of SCs is in smart mobility and transportation which is on the verge of a profound and large-scale transformation. A general term used to refer to efforts in this regard is Intelligent Transportation System (ITS). The interaction and integration of ITS and SC is depicted in Figure 1. ITS makes use of Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) applications, such traffic management techniques as adaptive cruise control, cooperative navigation, cooperative adaptive cruise control (platooning), etc., to enhance road and vehicle safety, improve traffic efficiency, and provide entertainment and information to vehicle occupants. Rather than developing new roads or augmenting road capacities, which might not be possible due to financial, geographic, social, and historical constraints in some cities, ITS utilizes ICT to improve transportation experience of the citizens. It makes heavy use of static, vehicular, and/or mobile app-based sensor data. Major mechanisms ITS uses are congestion control systems, car-pooling, smart scheduling of traffic, the use of connected and autonomous vehicles (CAV), augmented mass transportation, and traffic estimation.

The expected benefits of ITS are reduced traffic time waste, reduced energy consumption, improved productivity, decreased stress levels, lower pollution, diminished traffic accident fatalities.

Massachusetts Institute of Technology (MIT) researchers predict that a fleet of shared CAVs in Singapore can almost eliminate parking problems and provide mobility to everyone in the city of Singapore. The most critical feature of an ITS in SC is its data-driven methodology. With the increasing collection, access, and sharing of traffic data, it is essential to analyze the real-world big data and develop techniques to facilitate the aforementioned benefits. While there are many studies about traffic management, especially in traffic light coordination, real-world data analytics in developing these techniques. It is within this line that the Istanbul Metropolitan Municipality (IMM) Directorate of Traffic has deployed over 700 sensors to collect relevant real-time traffic data.

■ IMPLEMENTING AUTONOMOUS VEHICLES PILOT PROGRAM FOR FIRST MILE/LAST MILE TRANSIT SOLUTIONS AT A TOD GO STATION

1. **Introduction**: Propose the implementation of a proof-of-concept pilot program utilizing autonomous vehicles to address the first mile/last mile transit issue around a Transit Oriented Communities (TOD) GO Station geofenced campus area on the Stouffville GO Line. The primary objective of this pilot program is to evaluate the feasibility, efficiency, and effectiveness of autonomous vehicles in providing reliable and convenient transportation options for commuters accessing the Unionville TOD GO Station.
2. **Pilot Program Details**
   a. **Vehicle Selection**: The proof of concept will employ twelve-seater electric mini-buses as the primary autonomous vehicles. These vehicles will be equipped with advanced autonomous driving technologies and adhere to strict safety standards.
   b. **Geofenced Environment**: The proof of concept will operate within a geofenced environment, which will define the specific operational area for the autonomous vehicles. The geofenced zone will encompass the Unionville TOD GO Station designated campus area and its immediate surroundings.
   c. **Objective**: The primary objective of the proof of concept is to assess the effectiveness of autonomous vehicles in addressing the first mile/last mile transit and parking issues. The program will evaluate the vehicles' ability to provide convenient, reliable, and sustainable transportation options for commuters traveling to and from the Unionville TOD GO Station.
   d. **Duration**: The proof of concept will run for a duration of 24 to 36 months to gather comprehensive data and evaluate the performance of the autonomous vehicles operating in a geofenced campus environment.
3. **Collaboration and Stakeholder Engagement**
   a. **Transit Authorities**: Recommend collaborating with the relevant transit authorities, such as Metrolinx, GO Transit, TTC, Viva, and York Region Transit, to secure necessary permits, approvals, and access to the Unionville TOD GO Station and its surrounding areas for the pilot program.
   b. **Community Engagement**: It is vital to engage with the local community, residents, and commuters to educate them about the pilot program, address any concerns or queries, and gather feedback to improve the program's effectiveness.
   c. **Data Collection and Evaluation**: The proof of concept should establish a robust data collection and evaluation system to monitor the performance, safety, and passenger satisfaction metrics. This data will enable objective analysis and refinement of the autonomous vehicle operations.
4. **Funding and Resources**: Propose securing adequate funding and resources from public and private sources to cover the costs associated with running the proof of concept, including vehicle acquisition, infrastructure development (if necessary), data collection and analysis, and stakeholder engagement initiatives.
5. **Reporting and Recommendations**: At the conclusion of the proof of concept, a comprehensive report be prepared, summarizing the findings, key metrics, and recommendations for further implementation or expansion of autonomous vehicles for first mile/last mile transit solutions at the Unionville TOD GO Station and potentially other locations within the transit network.

STOUFFVILLE GO TRANSIT CORRIDOR

Most of the Stouffville GO Line Stations are parking lots. There is a lack of a holistic and comprehensive integrated corridor level and network planning. A feasibility corridor study is needed to determine the possibility of transforming the Stouffville line from a GO Commuter Line to a complete destination TODs Corridor Line.

Through this proof-of-concept, we will evaluate the feasibility, safety, user experience, and overall impact of autonomous vehicles within the geofenced TOD campus environment. By conducting rigorous testing, gathering valuable data, and engaging with stakeholders, we aim to generate insights that will guide the future implementation and expansion of autonomous transportation solutions in GO TOD areas.

The first mile, last mile problem refers to the difficulty faced by individuals in accessing and leaving transit stations, often requiring additional modes of transportation to bridge the gap between their origin or destination and the transit hub.

Traditional solutions such as buses and shuttles have been implemented, but they can be inflexible, inefficient, and costly to maintain. This proof-of-concept pilot aims to explore the potential of autonomous vehicles as a viable solution for the first mile, last mile problem within a geofenced TOD campus environment. By harnessing cutting-edge autonomous vehicle technology, we aim to provide a safe, reliable, and convenient mode of transportation for individuals traveling within the campus area, connecting them seamlessly to transit stations and reducing the need for private car ownership.

The advancements in autonomous vehicle technology provide an opportunity to address the first mile and last mile transit issue by implementing a pilot program for autonomous electric minibuses operating in a geo-fenced environment. As we explore the potential of autonomous vehicles to solve the first mile, last mile issue and revolutionize the way people commute within Transit Oriented Communities. Harnessing AV and AI (Artificial Intelligence) technology, we can create smarter, more sustainable, and connected urban environments for the benefit of all.

Autonomous vehicles have the potential to revolutionize transportation, offering numerous benefits including increased safety, reduced congestion, and enhanced mobility options. Transit Oriented Communities (TODs) are designed to encourage the use of public transportation, walking, and cycling, and promote sustainable urban development. The Stouffville GO Line serves as a critical transportation corridor connecting various communities and providing commuters with access to key destinations. A proof of concept for autonomous vehicles in geofenced areas within TOD campus on the Stouffville GO Line could provide valuable insights into the integration of autonomous vehicles into public transportation systems.

Conducting a proof of concept would allow us to assess the feasibility, safety, and societal impacts of autonomous vehicles within geofenced areas, while considering the unique characteristics of the TODs. It is essential to collaborate with transportation authorities, local municipalities, community organizations, and other stakeholders to ensure a comprehensive and inclusive approach to the pilot program. Transit Oriented Communities have emerged as a vital component of sustainable urban development, focusing on creating vibrant, walkable neighborhoods centered around public transportation hubs. These communities prioritize accessibility, connectivity, and the reduction of car dependency. Despite their numerous benefits, TOD areas frequently face challenges when it comes to the first and last legs of a commuter's journey.

The Unionville Transit Oriented Communities (TOD) GO Station, located on the Stouffville GO Line, faces significant challenges in addressing the first mile and last mile transit and parking issues for commuters within the geo-fenced designated campus area and future TOD stations on the Stouffville GO Corridor. The current transportation infrastructure does not adequately support seamless connectivity between the Unionville TOD GO Station and surrounding areas, resulting in decreased accessibility, increased traffic congestion, and limited transportation options for commuters.

An Autonomous Vehicles (AV) Proof of Concept Pilot Be Conducted" in a TOD Geo-fenced Campus Environment including:

1. A Proof of Concept for autonomous vehicles in a geo-fenced campus environment areas within the Unionville Transit Oriented Communities Geo-fenced Campus Environment on the Stouffville GO Transit Line shall be initiated.
2. The Proof of Concept shall be carried out in collaboration with qualified and experienced autonomous vehicle manufacturers, transportation experts, researchers, MTO and Metrolinx staff.
3. Adequate funding shall be secured from both public and private sources to support the planning, implementation, and evaluation of the proof of concept pilot program.
4. Regular progress reports shall be provided to the appropriate governing bodies and stakeholders, ensuring transparency and accountability throughout the pilot program.
5. The findings and lessons learned from the pilot program shall be used to inform future policy decisions and regulations regarding autonomous vehicles within TODs and broader transportation networks.A comprehensive evaluation of the pilot program's outcomes shall be conducted, considering factors such as safety, efficiency, public acceptance, and economic viability, to determine the potential for scaling up autonomous vehicle operations in TODs on the Stouffville GO Line and beyond.
6. A proof-of-concept pilot program for autonomous vehicles be implemented at and around the Unionville TOD GO Geofenced Station area, focusing on addressing the first mile/last mile transit and parking issues.

7. The Proof of Concept will utilize twelve-seater electric minibuses as the autonomous vehicles, ensuring that they meet safety standards and are equipped with the necessary technology for autonomous operation.
8. The Proof of Concept will operate within a geo-fenced environment, defining specific boundaries for the autonomous vehicles' operation, ensuring their safety and adherence to the designated routes.
9. The Proof of Concept will aim to enhance connectivity between the Unionville TOD GO Station and surrounding areas by providing seamless transportation options for commuters, reducing reliance on private vehicles, and decreasing traffic congestion.
10. The recommended station spacing for the Stouffville GO Line will be assessed and optimized to ensure efficient and convenient access for commuters, considering factors such as population density, existing infrastructure, and commuter patterns.
11. The Proof of Concept will be conducted in collaboration with relevant stakeholders, including local government authorities, transportation agencies, technology providers, and community representatives, to ensure the successful implementation and evaluation of the autonomous vehicles' proof of concept pilot.
12. The results and feedback obtained from the pilot program will be thoroughly evaluated to determine the feasibility, effectiveness, and potential scalability of autonomous vehicles for first mile and last mile transit solutions and addressing the parking issues, with the goal of informing future transportation and land-use planning and investment decisions.

The implementation of an autonomous vehicles proof of concept pilot program operating in a geofenced environment at and around the Unionville Transit Oriented Communities GO Station designated campus environment on the Stouffville GO Line, utilizing twelve-seater electric minibuses, will provide a valuable opportunity to address the first mile and last mile transit issue, improve commuter accessibility, and pave the way for a more sustainable and efficient transportation system. The proof of concept AV pilot expected duration is 3 years.

SELF-DRIVING-CAR RESEARCH HAS COST $16 BILLION SO FAR

Where the billions spent on autonomous vehicles by U.S. and Chinese giants is leading autonomous vehicle (AV) technology in a rapidly growing and competitive market that involves tech giants, automakers, and start-ups.

Autonomous Vehicle research is costing billions, and so far there has been very little short-term reward for it, says tech-news website "**The Information",** relying on data supplied from people involved. Waymo has spent the most, with an estimated $5.5 billion used to finance its R&D.

The amount of money being spent on autonomous vehicles (AVs) is hard to estimate precisely, as different sources may use different definitions and time frames. However, some possible figures are over $200 billion in total global investment, $16 billion by OEMs, startups, and established companies. The market is expected to grow significantly in the future, reaching $62 billion by 2026 and $7 trillion by 2050. General Motors said that it will increase spending on electric and autonomous vehicles to $35 billion through 2025, a 30% increase from plans announced late last year

The first self-driving vehicles will likely be robo-taxis and 12-18 seater mini-buses, which are unlikely to create a financial windfall. Driving is terrific. Commuting is horrible. The self-driving-car scenario I think we can all get behind is to have a vehicle that takes you to work while you catch up on your emails, nap, or watch the latest episode of Fastest Car on Netflix. Then, when you're not trapped in gridlock, you take the wheel.

Figure 3.**Internet of Things - Autonomous Vehicles - Level 5 (fully autonomous - no driver required))**

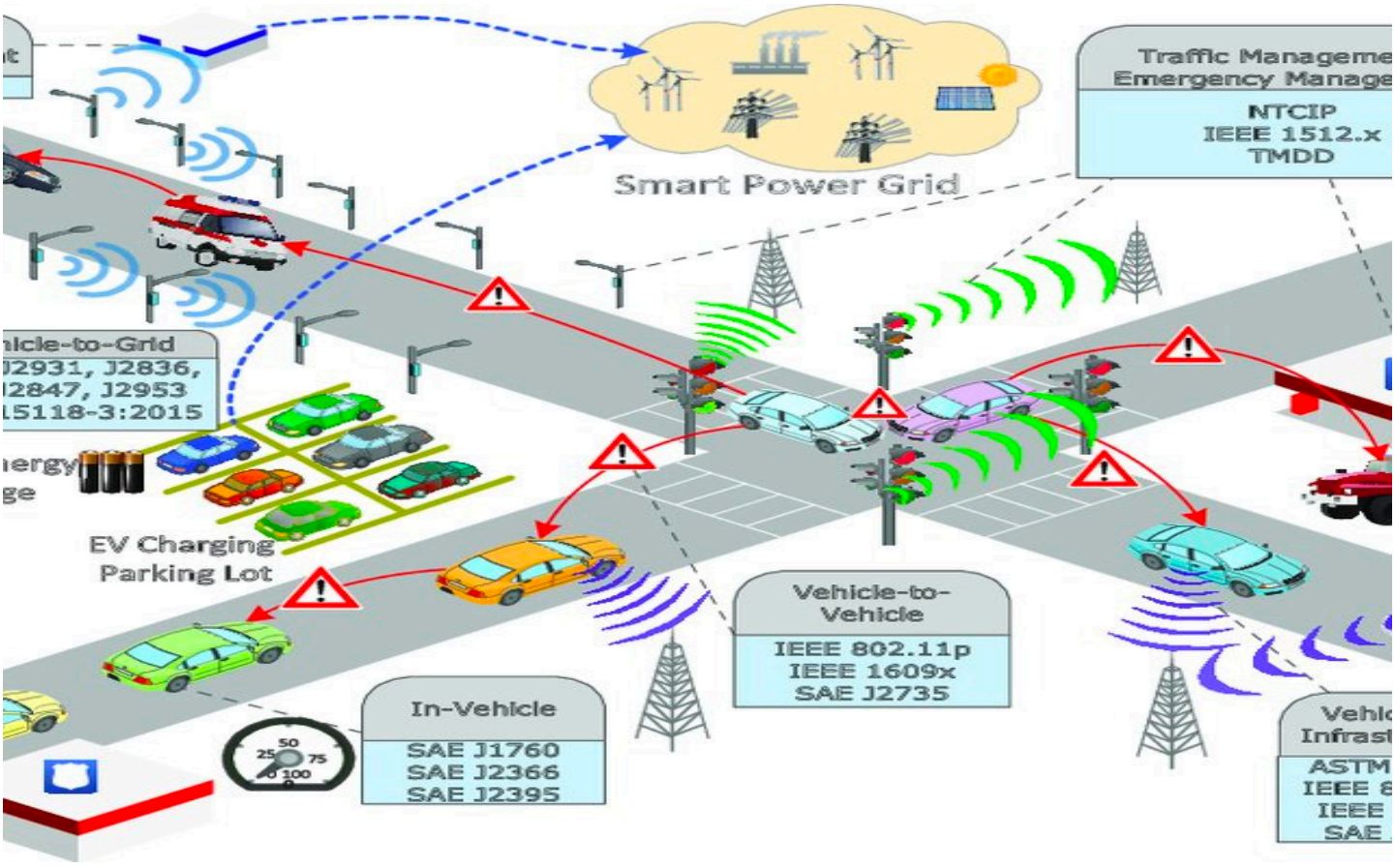


Figure 2.**Intelligent Transportation System and Smart City are Closely Coupled.**

CULTIVATING THE FUTURE:

PROOF OF CONCEPT
FOR INDOOR URBAN VERTICAL FARMING
"CULTIVATING THE FUTURE"

"2 ACRES OF INDOOR URBAN VERTICAL FARMING IS THE EQUIVALENT OF 370 ACRES OF FLAT TRADITIONAL FARMING"

APPENDIX 5

Notice of Motion: INDOOR Urban Vertical Farming - **"Cultivating the Future"**
Moved by: Regional Councillor Jim Jones
Seconded by: Councillor Keith Irish

URBAN VERTICAL FARMING - "CULTIVATING THE FUTURE"

■ MARKET SCENARIO

The problem is once you lose farmland, you lose it forever, and it never comes back. We are losing 319 acres of farmland daily. Indoor Urban Vertical Farming represents a multiple win for all: no pesticides/herbicides, space for renewable power (i.e., solar panels), better labour use, year-round local production, limited water waste, reduced carbon footprint, fewer trucks on the road and more. With the building of Highway 413, thousands of more acres will be destroyed and gone forever. The loss of farmland from this project will result in fragmentation of the agricultural land base and a weakening of the provincial agricultural system. Food supply, given inflation, is becoming a critical issue for us to address. The Province needs to invest in rail integrated TOD transit network, tall versus sprawl and building complete transit oriented development communities.

We must control our own food supply where possible. California has environmental problems like water shortages and weather issues. If we can grow produce in Ontario that would normally be trucked from California, we prevent all of those carbon emissions and people are consuming fresh produce.

The Global Urban Vertical Farming Market was valued at US $23.75 Billion in 2017 and is anticipated to reach US $40.25 Billion by 2022 at a Compound Annual Growth Rate (CAGR) of about 22.28%.

Based on equipment type, the global indoor urban vertical farming market can be classified into the lighting system, sensors, tank, environment and climate controller, pumps and irrigation systems, and meter. By growing technology, a global vertical farming market is divided into aeroponics, hydroponics, and aquaponics. In terms of crops type, the global vertical farming market can be fragmented into lettuce, peppers, broccoli, spinach, cucumbers, tomatoes, strawberries, summer squash, eggplant, cantaloupe, microgreens & sprouts, spinach, mushrooms. watermelons, and pomegranates. By region, a global indoor urban vertical farming market is segmented into North America, Europe, Asia Pacific, Africa, Middle East, and Latin America.

Indoor Urban Vertical farming provides features such as low transportation cost, less water requirement, and technology advancement such as internet of things. These are the key factors which help to drive growth in the Global Indoor Urban Vertical Farming Market. The indoor urban vertical farming has increased in popularity in recent years owing to the weakening in water level and a shortage of rain. Rapid urbanization, increasing demand for organic food, a limited area of the landscape for traditional farming are all boosting the growth in the indoor urban vertical farming global market. However high initial set up investments and involvement of emerging technology hamper the Global Vertical Farming Market growth. All crops cannot be grown by an indoor urban vertical farming method, limiting the growth in the indoor urban vertical farming market.

■ GLOBAL URBAN VERTICAL FARMING MARKET

By equipment type, a LED lighting system is expected to dominate the growth in the indoor urban vertical farming market. Lighting system devices use an LED lighting system which produces a dual-band color spectrum and maintains efficiency and low heat dissipation in vertical farming.

Based on the growing technology, hydroponics (water) technology is growing uses mineral nutrient solutions to feed the plants in water without soil. The aeroponics (air) growth technology is projected to grow at the high rate CAGR during the forecast year owing to it facilities, faster plant growth and a greater number of plants within less time than the plants under normal conditions.

In terms of regions, the North America region holds the largest market share in the indoor urban vertical farming market owing to the presence of a large number of project entrepreneurs and research development centers in the region. However, Asia-Pacific accounted for a large share in the Global Urban Vertical Farming Market owing to rising demand for organic food, shortage of rain and government initiatives of subsidies to expand the Global Urban Vertical Farming Market.

■ FUTURE OF INDOOR URBAN VERTICAL FARMING

The future of farming has arrived, and it is indoor urban vertical farming. These farms may seem like something out of a sci-fi novel, but soon they'll be as ubiquitous as your local grocery stores. The technique grows crops in vertical layers, which optimizes plant growth and soilless farming techniques The future economy for indoor urban vertical farming is promising. Vertical farming is defined as growing plants indoors in a stacked formation and in a controlled environment. It is equipped to grow food all year round and its produce is available to consume within 24 hours of harvesting. Vertical farmers say they can play a bigger role as Ontario farmland disappears. Critics aren't so sure, but those running vertical farms say they will be part of the solution.

URBAN VERTICAL FARMING WILL PLAY A BIGGER ROLE AS ONTARIO FARMLAND DISAPPEARS

2021 CENSUS of AGRICULTURE SHOWS ONTARIO IS LOSING 319 ACRES OF FARMLAND DAILY"

In an era where sustainability and food security are of paramount importance, the need to innovate our agricultural practices has never been more pressing. One key challenge we face today is our heavy reliance on fruits and vegetables sourced from faraway regions, notably California and other distant locales. Canada spends roughly half a billion dollars annually on 265,767 metric tonnes of American lettuce imports in 2022 alone, the most spent of all the vegetables that are imported (Source: Financial Post). The vulnerabilities posed by long-distance transportation, water scarcity, and environmental factors necessitate a bold and transformative solution to ensure Canadians are not paying $14.99 for a bag of romaine hearts again (Source: Financial Post).

Indoor Urban Vertical farms have demonstrated a significant reduction in resources when compared to traditional farms, making them environmentally responsible. 2 acres Indoor Urban Vertical Farm produces more than a 370 acre Flat Farm" (Source: Urban Organic Gardener). One of Square Roots' indoor farms, for example, produces the same amount of food as a two or three-acre farm annually, just from 340 square feet. This yield is achieved by growing plants at 90 degrees, and by using artificial intelligence (AI) to ensure the environment is optimal for each specific plant, including the day and night temperatures and amount of CO2 needed. On average, indoor urban vertical farms use between 80% and 99% less water than conventional farms and leverage controlled environment technology to eliminate the use of pesticides, optimizing resource efficiency and minimizing waste and environmental impact (Source: Planet Renewed).

Almost all of it comes from the U.S., and the majority from one state: California. For years, these shipments of imported lettuce arrived without incident, supplying a steady stream of leafy greens to our frost bitten country. Last year, heat, drought and disease coalesced to blight lettuce crops in California so severely that for a few weeks, lettuce abruptly vanished from Canadian grocery store shelves. While little was available, in some cases, costs rose 500% more than usual.

Indoor urban vertical farming is a promising solution to address food security, sovereignty, sustainability, and environmental issues in urban areas. Countries like Dubai, Saudi Arabia, Singapore, USA and China are investing heavily in indoor urban vertical farming. The future of indoor urban vertical farming looks very bright as it presents several advantages such as year-round crop production, efficient use of space, reduced water usage, decreased transportation costs and local foods that are higher in nutrients than imported alternatives.

Technology advancements such as Artificial Intelligence (AI), Robotics, and Internet of Things (IoT) will play a significant role in the future of indoor urban vertical farming. For instance, AI algorithms can help to optimize crop growth, predict yields, and optimize energy efficiency within the indoor urban vertical farm, while robots can assist in planting, harvesting, and maintenance tasks. Indoor Urban Vertical farms could be integrated into the design of buildings and other urban infrastructure, making it a part of the urban landscape by bringing local food into the heart of our communities. This could reduce the environmental footprint of cities, promote sustainability, create skills-based jobs, support economic growth, and eliminate thousands of food miles from our current supply chain.

Collaboration and partnerships between indoor vertical farming companies, agricultural researchers, federal and provincial governments, educational institutions, and other stakeholders could accelerate the development and adoption of indoor urban vertical farming in an efficient, responsible, and economically viable pathway. Indoor urban vertical farming is a sustainable and innovative approach to food production that allows for year-round cultivation of crops in a controlled environment. This technology has the potential to stabilize access and affordability of food, reduce transportation emissions, reduce nitrogen fertilizer application, and create skilled green jobs in our city. Here are some key aspects of the future of urban vertical farming:

While urban vertical farming has significant potential, there are still challenges to overcome, such as high initial set up costs, energy consumption, and determining the scale of operations in a particular region. However, as technology advances, economies of scale improve, and public awareness grows, indoor urban vertical farming is expected to play an increasingly important role in ensuring food security and sustainability in urban areas. Indoor Urban Vertical Farms offer the advantage of year-round production, as they are not dependent on external weather conditions. By maintaining consistent and optimal growing conditions indoors, these farms are less vulnerable to the impacts of climate change and can ensure a stable supply of fresh produce throughout the year. This resilience to external factors makes indoor urban vertical farming a crucial component of sustainable and reliable food production systems across our country.

However, Indoor Urban Vertical Farming has the potential to be the next trillon dollar industry.

Increased Food Production: Urban vertical farming allows for the cultivation of a wide variety of crops in a controlled environment, where plants grow on vertical towers or stacked layers. Maximizes the use of limited urban space and enables year-round production of greens, herbs, berries, and small vegetables, resulting in increased food production per square meter compared to traditional farming methods.

1. **Climate Resilience**: Controlled environments in vertical farms can provide a buffer against extreme weather conditions and climate change-related challenges, ensuring a more stable food supply.
2. **Crop Diversity**: Urban vertical farming has traditionally focused on leafy greens and herbs due to space constraints. In the future, there could be efforts to expand the range of crops that can be successfully grown in vertical farms. This might include fruits, root vegetables, and other more complex crops.
3. **Technological Advancements**: Continued advancements in LED Lighting technology, automation, sensors, and data analytics, are likely to enhance the efficiency and productivity of vertical farming systems. These technologies can optimize growth conditions, reduce resource consumption, and improve crop yields.
4. **Integration with Smart Cities**: As cities become smarter and more interconnected, vertical farms could be integrated into urban infrastructure to contribute to local food resilience. This might involve repurposing underutilized urban spaces or retrofitting existing buildings for vertical farming.
5. **Sustainable Resource Management**: Vertical farming incorporates efficient resource management practices. The operations reduce water consumption by utilizing recirculating hydroponic or aeroponic irrigation systems that recycle and reuse water. Furthermore, it minimizes the use of synthetic pesticides and fertilizers, decreases land usage, and drastically reduces transportation distances, thereby lowering carbon emissions.
6. **Local and Fresh Produce**: Urban vertical farming enables the cultivation of fresh produce close to urban centers, reducing the time and distance between harvest and consumption. This proximity enhances the quality, taste, and nutritional value of the harvested crops, providing consumers with a more sustainable, traceable, and healthier food source. Innovations in nutrient delivery and management systems could lead to improved plant health and reduced environmental impact.
7. **Reduced Food Miles**: Vertical farms located within or near urban areas can significantly reduce the distance food needs to travel from farm to table. This can lead to fresher produce with a lower carbon footprint. We must stop relying on food coming on trucks from the US. California has water and wildfire challenges. We cannot depend on the USA to send Canada produce. We must be independent and plan our own food ecosystem to feed Canadians.
8. **Integration with Smart Technologies**: The future of indoor urban vertical farming will witness advancements in automation, robotics, and artificial intelligence (AI). Smart technologies can optimize resource allocation, monitor crop health, and automate various processes, resulting in improved efficiency, productivity, and cost-effectiveness.
9. **Integration into Urban Architecture**: Indoor Urban vertical farms can be integrated into the design of buildings, such as incorporating green walls, modular farming units, rooftop gardens, rooftop greenhouses or using underutilized underground spaces. This integration provides multiple benefits, including enhanced aesthetics, improved air quality, and insulation properties, as well as increased biodiversity and social connectivity in urban environments.
10. **Community Engagement and Education**: Indoor Urban vertical farms can serve as educational and community spaces, fostering awareness about sustainable food production, nutrition, and environmental stewardship. By involving local residents in the farming process, urban communities can develop a deeper connection to their food sources and promote social cohesion. Educational institutions must also participate in the development and running of indoor urban vertical farms, provide credits to students who learn the technologies and methods of vertical farming. If programs do not exist yet, our educational institutions must create them.
11. **Economic Viability**: As technology improves and economies of scale are achieved, the cost-effectiveness of vertical farming will increase, potentially making it a more financially viable option for food production.
12. **Research, Collaboration and Scaling**: Ongoing research and innovation in fields such as plant biology, genetics, and agronomy could lead to the development of crop varieties better suited for vertical farming conditions, further enhancing yields and nutritional content The future of indoor urban vertical farming will involve collaborations between technology companies, agricultural experts, urban planners, and policymakers. Such collaborations will facilitate knowledge sharing, research and development, and the scaling up of indoor urban vertical farming initiatives to meet the growing demand for sustainable food production.
13. **Regulation and Policy Oversite**: The Federal and Provincial Governments establish Canadian regulations and standards for indoor urban vertical farming. The Ministries monitor urban vertical farming as there may be a need for updated regulations and policies to address issues related to food safety, land use, water usage, and energy consumption.

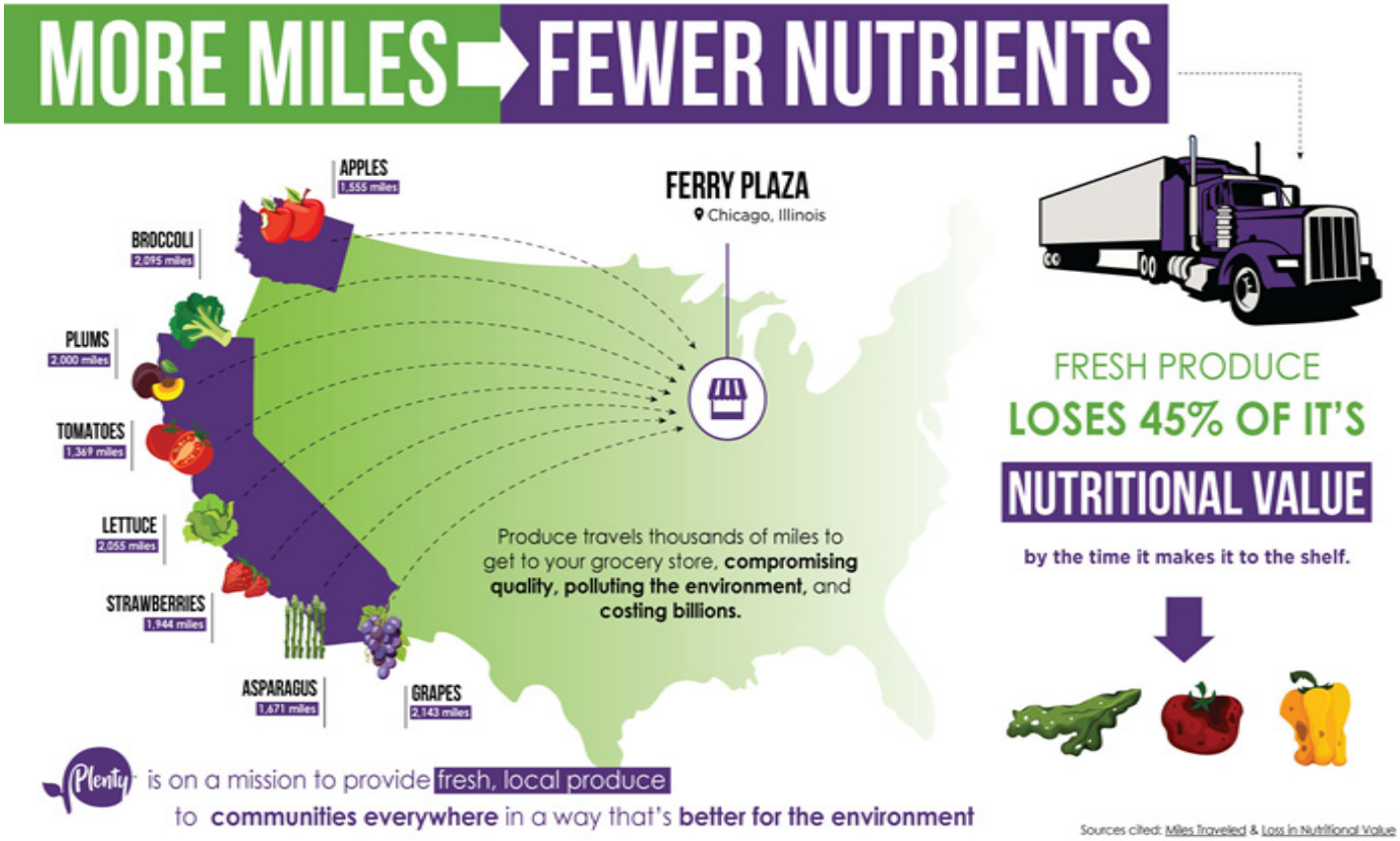


Figure 1. **Indoor Urban Vertical Farming - "Reducing the Carbon Footprint"**

Markham conduct an Indoor Urban Vertical Farming Proof-of-Concept Pilot called "Cultivating the Future".

To address these challenges head-on, Markham propose a proof-of-concept pilot for indoor urban vertical farming, a ground-breaking approach that aims to revolutionize the way we grow and consume fresh produce. By bringing agriculture into the heart of our city, this initiative has the potential to drastically reduce our dependency on external sources, secure local food supplies, and foster a sustainable and resilient future.

The primary objective of the Proof-of-Concept Pilot Project is to demonstrate the viability and benefits of implementing indoor urban vertical farming systems on a small scale. By leveraging advanced technologies, solar and vertical space within urban environments, we can establish controlled environment spaces for year-round crop cultivation. This project eliminates the limitations of traditional outdoor farming, such as weather constraints, land scarcity, pesticide use, limited growing season, and excessive water usage.

A crucial motivation behind this proof-of-concept pilot is to demonstrate and track the reduction of our carbon footprint, proving that we can minimize the environmental impact associated with long-distance food transportation. Currently, vast quantities of greenhouse gas emissions are generated as fresh produce travels across the country, compromising air quality and contributing to climate change. By establishing local indoor urban vertical farms, we create jobs, and we can significantly reduce transportation distances and eliminate the need for excessive packaging, and long-chain refrigeration, leading to a more sustainable and eco-friendly food production system.

Furthermore, indoor urban vertical farming provides numerous additional advantages to the communities in which they operate. By utilizing advanced techniques like hydroponics, aeroponics, and vertical stacking, we can maximize crop yields while conserving water and minimizing the use of harmful pesticides, while employing Canadians locally. These closed-loop systems also present opportunities for the advancement of energy efficiency, utilizing renewable energy sources and innovative lighting technologies to optimize plant growth and minimize power consumption.

Figure 2. **Large Scale Greenhouse Automation**

Figure 3. **Why the Indoor Farming Movement is Taking Off**

Figure 4. **A Indoor Urban Vertical Farm Grow in Newark**

The experimentation is to identify the most economical fruits and vegetables suitable for indoor urban vertical farming operations. By leveraging vertical space and optimizing cultivation techniques, we can maximize yield per square foot and minimize production costs, stabilizing the price of food throughout the year.

The experimentation will focus on identifying high-value crops that can be grown economically in an indoor urban vertical farming setup, ensuring the long-term financial viability of such ventures. The sustainability of cities can be significantly enhanced through indoor urban vertical farming. It offers social, economic, and environmental advantages, making it an attractive proposition for urban areas. By reducing the reliance on traditional agricultural practices that require vast amounts of land and resources, urban vertical farming conserves space and minimizes transportation distances, leading to reduced carbon emissions and lower energy consumption.

To successfully conduct this experiment and gather comprehensive data, we seek financial support and technical research assistance from the Federal and Provincial Ministries of Agriculture. The funds will be utilized to set up the necessary infrastructure, procure equipment, conduct research and analysis, and train personnel.

The technical support will involve collaboration with agricultural experts and researchers to optimize cultivation techniques, monitor plant growth, and assess the economic and environmental impact of indoor urban vertical farming. An analysis could be done to determine which federal and provincial innovation programs we could apply for and secure funding from.

It is also important to note that urban vertical farming will create jobs. Part of our solution could be actively looking for and attracting urban vertical farming experts who want to immigrate to Canada. There is no reason why Canada cannot become a world leader in becoming self-reliant on producing our own food to feed our residents. We can become an example of what is possible.

SYSTEMS FOR WASTE TO ENERGY:

PROOF OF CONCEPT PILOT:
"WASTE TO ENERGY" AT A TOD GO STATION

"WASTE TO ENERGY AND REDUCE THE CARBON FOOTPRINT

APPENDIX 6

Notice of Motion: High-Speed Powered Chute Systems for Waste Removal
Moved by: Regional Councillor Jim Jones
Seconded by: Councillor Keith Irish

SYSTEMS FOR WASTE TO ENERGY

■ CONDUCT A WASTE TO ENERGY PROOF-OF-CONCEPT PILOT AT A TOD GO STATION

A central garbage collection system is an efficient and comprehensive waste management approach that involves the collection, disposal, and recycling of waste from various sources in a centralized location. This system offers numerous benefits to both communities and the environment, making it a compelling choice for modern waste management.

a. **Data-Driven Decision Making**: A centralized waste management system facilitates data collection and analysis. Waste composition and generation patterns can be studied to identify trends and develop targeted strategies to further enhance waste reduction and recycling efforts.

b. **Adaptability and Scalability**: Central garbage collection systems can adapt to the changing needs of communities and can be scaled up or down based on population growth or waste generation rates. This flexibility allows for long-term sustainability and efficient management of waste in evolving urban landscapes.

c. **Compliance with Environmental Regulations**: Centralized waste management systems are better equipped to meet and exceed environmental regulations and sustainability goals set by local, regional, and national authorities. Compliance with these regulations fosters responsible waste management practices and demonstrates commitment to environmental stewardship.

d. **Resource Recovery and Energy Generation**: In addition to recycling, modern central garbage collection systems may incorporate resource recovery facilities, such as waste-to-energy plants and waste processing technologies. These facilities convert non-recyclable waste into energy, reducing the reliance on fossil fuels and providing an alternative, sustainable energy source for communities.

WASTE TO ENERGY CONVERSION FOR A SUSTAINABLE FUTURE

Air pollution, climate change, and plastic waste are three contemporary global concerns. Air pollutants affect the lungs, green gases trap heat radiation, and plastic waste contaminates the marine food chain. Two-thirds of climate change and air pollution drivers are emitted in the process of burning fossil fuels. Pollutants settle in months, green gases take centuries, and plastics take thousands of years. The most polluted regions on the planet are also the ones that are greatly affected by climate change. Air pollutants grow in most climate-change affected areas, contributing to the greenhouse effect. Smog affects local and regional transboundary countries. The biggest greenhouse gas (GHG) emitters may not be the worst-hit victims because wind and water flow distribute green gases and plastic waste worldwide. The major polluters are often rich and developed countries, and the worst affected countries are the underdeveloped poor communities. Technologically advanced countries may help the developing countries in research into removing particulate matter, green gases, and plastic waste. Intergovernmental Panel on Climate Change (IPCC) and Paris Accord have emphasized on immeasurable efforts to encourage the conversion of pollution, green gases, and plastic waste into energy. Conversion of CO2 into petrol, GHG gases into chemicals, biowaste into biofuels, plastic waste into building bricks, and concrete waste into construction materials fosters a circular economy using existing waste to power, energy, and value-added product conversion technologies.Air pollution affects humans, animals, plants, and energy systems. The conversion of air pollutants decelerates climate change, decreasing life and property losses. Interest-driven sustainable technologies that convert air pollutants to power, energy, and value-added products can relieve the world from air pollution and global warming crises. Air pollution-related premature deaths are increasing with climate change. Oil barons have unearthed oil, gas, coal, and shales, and proper dealers have deforested jungles

Figure 1. **Speed of Waste through the pipe is 30 meters per second...vs Hugh Trucks stopping and starting**.

to build housing societies. All diseases spread through the air, water, and food chain; hence, we keep pace in harmony with nature by sequestering carbon that we produce on a daily basis and replacing coal and gas power plants with solar and wind energy. Pollutants pollute the air, and plastics contaminate the food chain. GHG emissions remain in the atmosphere for a long time, affecting the radiation balance causing global warming. The conversion of waste into watts is a holy grail for the planet's human civilization. Waste to energy conversion technologies allow us to utilize waste heat instead of producing more electricity and GHG gases to accomplish the same task. Waste to energy conversion is the first step toward sustainable living.

CENTRALIZED WASTE MANAGEMENT

The current garbage collection method (Transport) also known as a centralized waste management, refers to a waste management approach where waste collection and disposal are managed from a central location or facility with a large fleet of trucks, instead of individual dumpsters or collection vessels at each multi-family / high density building. Waste can be disposed of in a central waste collection point (load station) on each floor of the building and then be transported to a central collection location for all buildings in the TOD using an underground pipe network (high speed powered chute transport) similar to other underground utilities.

In current collection methods, waste is typically collected by designated waste management vehicles or trucks from various sources at each individual site. The collectors or dumpsters are not particularly high capacity and require frequent pickups that are calendar based, not capacity based. These vehicles have very high fuel consumption along with emitting hundreds of tons of carbon emissions per year, per truck.

These vehicles lumber through the TOD making frequent stops picking up individual waste bins to transport the waste content to a central facility, such as a waste transfer station or a landfill, where it is sorted, processed, and disposed of appropriately. Moving at an average of 25-30 km per hour and weighing over 13 metric tonnes, a fully loaded trash truck puts as much wear on roads as several hundred passenger vehicles combined. This collection method increases collection vehicle emissions, adds to wear and maintenance of streets, highways, and other transportation infrastructure, introduces increased slow downs to traffic thus increasing other vehicles emissions as well, and spreads waste through leakage into drainage and natural water systems.

The Advantages of an Underground Central Waste Collection System:

Efficiency:
Centralized high-speed powered chute waste transport systems allow for more efficient waste collection and transportation, (30 meters per second or 70 MPH) as pipe networks are fully automatic and can be optimized, and resources can be allocated effectively. It reduces duplication of efforts and significantly reduces the number of vehicles on the road.

Cost-Effectiveness:
By pooling resources and streamlining operations, central high-speed powered chute collection systems can be more cost-effective than individual waste disposal methods. It can lead to economies of scale in terms of equipment, personnel, and infrastructure.

Environmental Benefits:
High-speed powered chute waste transport waste management systems can incorporate recycling and waste processing facilities, enabling the recovery of resources at no additional costs. It promotes sustainable waste management practices and reduces the environmental impact of waste disposal.

Standardization:
With a central authority overseeing waste management, there can be consistent regulations, procedures, and guidelines for waste collection, sorting, and disposal. It ensures uniformity in waste management practices and improves overall effectiveness.

Public Health and Sanitation:
Central garbage collection systems help maintain cleanliness and hygiene by ensuring regular waste collection and proper disposal. It minimizes the risk of waste-related health hazards and the proliferation of pests and diseases. However, it's worth noting that the implementation of a central garbage collection system requires careful planning, infrastructure development, and cooperation between various stakeholders. Factors such as population density, geographic considerations, financial resources, and community participation should be considered to ensure the system's success.

- **Collection**: No blue boxes where the garbage blows away on windy days
- **Safety Risk Avoidance**: By not setting out containers on snowy/rainy days.

Markham initiates a in-depth Proof of Concept Waste to Energy Central Garbage Collection Pilot to evaluate the feasibility and effectiveness of a high-speed powered chute waste transport and collection system.

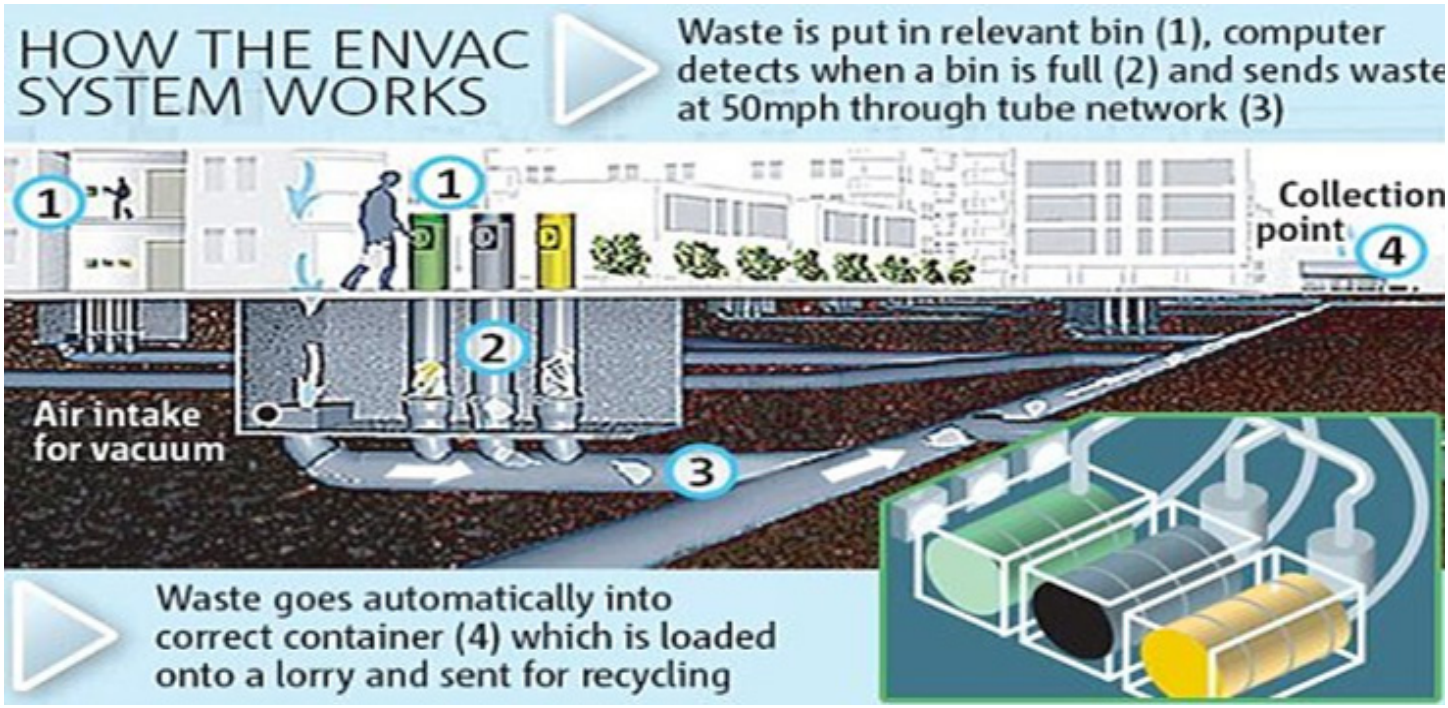


Figure 2. **How a Central Waste Management System Works**

CONDUCT A WASTE TO ENERGY CENTRAL GARBAGE COLLECTION PROOF OF CONCEPT PILOT

The Proof of Concept Pilot should Include:

- Assessing the technical aspects of implementing the high-speed powered chute waste transport and collection system, including the required infrastructure, equipment, and maintenance considerations.
- Evaluating the potential environmental impacts, including reductions in landfill waste, greenhouse gas emissions, and overall energy efficiency.
- Conducting a cost-benefit analysis to determine the economic viability and long-term financial sustainability of the proposed waste processing technology.
- Engaging with relevant stakeholders, such as waste management experts, environmental organizations, community members, and local authorities, to gather diverse perspectives and ensure public participation. Identifying potential partnerships and funding opportunities to support the implementation of the high-speed powered chute waste transport system.
- The pilot should be conducted over a defined period, with regular progress updates provided to the Council and shared with the community.
- Upon completion of the proof-of-concept pilot, a detailed report summarizing the findings, recommendations, and potential next steps should be presented to Council.
- Council should allocate the necessary resources, funding, and expertise to facilitate the successful execution of the proof-of-concept study.
- By conducting a proof-of-concept pilot for a central high-speed powered chute waste transport garbage collection system aligns with our community's commitment to sustainable waste management practices environmental stewardship, and innovative solutions. By exploring the potential of waste processing technology, we can make informed decisions that will benefit our community's long-term sustainability and well-being.

Figure 3. **These Collection Bins could be in a Common Area in Markham Centre**

1. Introduction:
The aim of this project is to develop a proof-of-concept high-speed powered chute waste transport and collection system pilot at a Transit Oriented Development (TOD) transit station. The project will explore the feasibility and potential benefits of integrating waste management and waste processing in a sustainable manner. By implementing this innovative solution, we can effectively address waste management challenges for the transit station.

2. Objectives:
- Implement a high-speed powered chute waste transport and collection system at TOD transit station area.
- Assess the environmental impact, cost-effectiveness, and scalability of the system.
- Engage stakeholders and raise awareness about sustainable waste management practices.
- Evaluate the potential for replicating the system in other transit stations and urban settings.

3. Methodology: The pilot project will follow these steps:

Step 1: **Feasibility Study**
- Conduct a comprehensive assessment of the TOD transit station area to identify waste generation patterns, types, and volumes.
- Analyze the energy demands and requirements of the transit station.
- Evaluate available automated waste technologies and select the most suitable option for the pilot.

Step 2: **System Design and Installation**
- Design the central high-speed powered chute collection system, including waste collection points, pipelines, storage units, and waste processing technologies.
- Collaborate with relevant stakeholders, such as waste management companies and waste processing experts, to ensure a well-integrated and efficient system.
- Install the central high-speed powered chute collection system at the designated location within the TOD transit station area.

Step 3: Testing and Optimization
- Test the functionality and performance of the central high-speed powered chute waste transport and collection system under various waste conditions and energy demands.
- Optimize the system parameters to maximize energy efficiency while ensuring proper waste disposal and minimizing environmental impact.
- Monitor and collect data on energy efficiency, waste diversion, and air emissions to evaluate the system's effectiveness using AI technologies.

Figure 5. **Central Waste Management System with 1-2 Waste Pickups Instead of a Pickup at Every Building**

Step 4: **Evaluation and Reporting**

- Assess the environmental, economic, and social impacts of the high-speed pneumatic waste transport and collection system.
- Analyze the cost-effectiveness and potential return on investment of the pilot project.
- Document the findings, lessons learned, and best practices for future implementation and scalability.
- Prepare a comprehensive report outlining the project's outcomes and recommendations.

4. Expected Outcomes:

- Reduction in waste disposal costs for the TOD transit station.
- Reduction in fossil fuel and energy consumption offset the station's energy consumption.
- Diversion of a significant portion of waste from landfill, contributing to environmental sustainability.
- Improved air quality and reduced greenhouse gas emissions.
- Stakeholder engagement and awareness about sustainable waste management practices.
- A proof-of-concept model that can be replicated in other GO transit stations and urban environments.

5. Conclusion:

The central garbage Waste to Energy Collection System presents a compelling case for its implementation due to its numerous advantages in terms of efficiency, recycling rates, cost savings, public health, and environmental benefits. By centralizing waste management efforts, communities can work towards a cleaner, greener, and more sustainable future. The high-speed powered chute waste transport and collection system pilot project at the TOD transit station will demonstrate the viability of integrating waste management as a utility. By removing inefficient, fossil fuel collection vehicles, we can achieve environmental sustainability and contribute to the reduction of the carbon footprint.

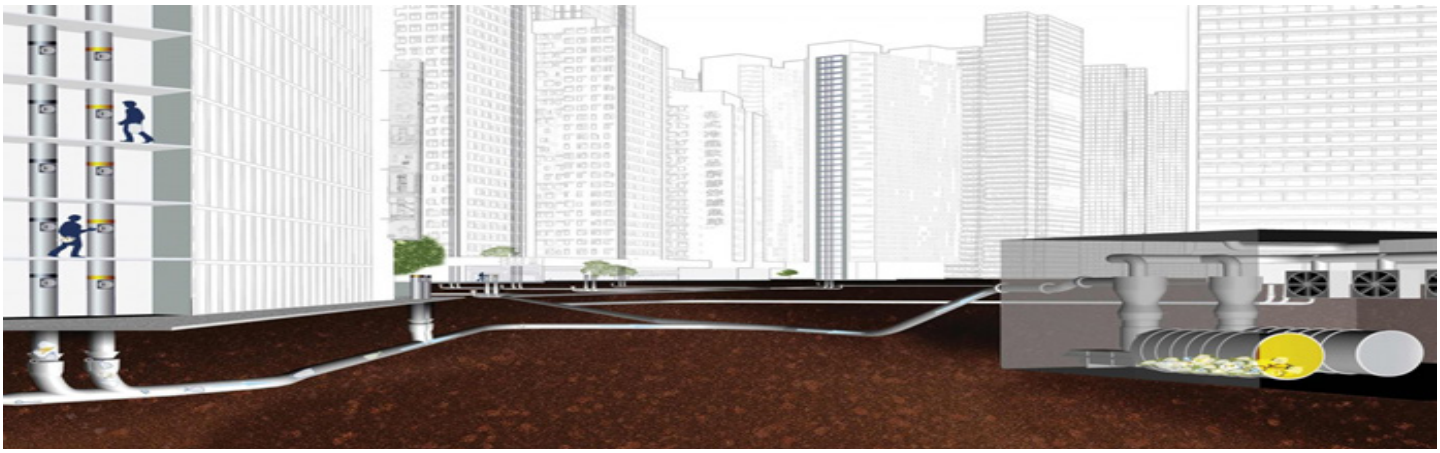


Figure 4. **Speed of waste through the pipe is 30 meters per second...vs hugh truck stopping and starting.**

FUTURE OF AFFORDABLE HOUSING:

PROOF OF CONCEPT FOR PREFABRICATED CONDOS

" MODULAR PREFBRICATION CONDONOMIUMS ARE THE FUTURE FOR AFFORDABLE HOUSING"

APPENDIX 7

Notice of Motion: Future of Affordable Housing - Modular Prefabricated Condos
Moved by: Regional Councillor Jim Jones
Seconded by: Councillor Keith Irish

FUTURE OF AFFORDABLE HOUSING

The future of modular prefabricated condominiums looks promising. Prefabricated modular construction, also known as modular construction, involves manufacturing building components in a factory and then assembling them on-site. This approach offers several advantages such as increased efficiency, reduced construction time, cost savings, and improved quality control.

■ TRENDS AND DEVELOPMENTS THAT WILL SHAPE THE FUTURE OF PREFABRICATED MODULAR CONDOMINIUMS:

1. **Sustainable and Energy-Efficient Designs**: There is an increasing emphasis on sustainable construction practices and energy-efficient buildings. Prefabricated modular condominiums can incorporate eco-friendly materials, energy-efficient systems, and renewable energy technologies, making them attractive to environmentally conscious buyers.
2. **Customization and Flexibility**: Modular construction allows for a high degree of customization and flexibility in design. Buyers may have the opportunity to choose from a range of floor plans, finishes, and amenities, allowing them to tailor their living space to their preferences. The modular nature of construction also enables easy expansion or reconfiguration of units in response to changing needs.
3. **Technological Integration**: With the advancement of smart home technologies, prefabricated modular condominiums can integrate these features seamlessly. Internet of Things (IoT) devices, home automation systems, and energy management tools can be incorporated during the manufacturing process, providing residents with enhanced convenience, security, and energy efficiency.
4. **Improved Construction Techniques and Materials**: As the modular construction industry continues to grow, there will be advancements in construction techniques and materials. Innovations in structural integrity, fire resistance, acoustic insulation, and thermal performance can enhance the quality and durability of prefabricated modular condominiums.
5. **Reduced Construction Timelines and Costs**: Prefabricated modular construction methods have the potential to significantly reduce construction timelines compared to traditional on-site building methods. The controlled factory environment allows for simultaneous manufacturing and site preparation, leading to shorter project schedules. Additionally, the economies of scale associated with factory production should help lower costs.
6. **Increased Acceptance and Adoption**: Over time, prefabricated modular construction is likely to gain wider acceptance and adoption within the construction industry. As developers and buyers become more familiar with the benefits and quality of these buildings, the demand for prefabricated modular condominiums will increase, leading to more innovation and investment in the sector.

■ THE ADVANTAGE OF PREFABRICATION MODULAR CONDOS OVER TOWNHOUSES:

1. **Cost-effective**: Prefabrication Modular condos are usually less expensive to build than townhouses because they are mass-produced in factories, which lowers the cost of labor and materials.
2. **Time-efficient**: Prefabricated modular condos can be built much faster than townhouses since the construction process is streamlined, and there are no delays due to weather conditions or other external factors.
3. **Low maintenance**: Prefabrication Modular condos are designed to be low maintenance, which means that they require minimal upkeep and repairs.
4. **Energy-efficient**: Prefabrication Modular condos are often built with energy-efficient materials and appliances, which can lead to lower energy bills for the homeowner.
5. **High-quality**: Prefabrication Modular condos are built in a controlled factory environment, which ensures a higher level of quality and consistency than traditional on-site construction.

■ ADVANTAGE OF MODULAR PREFABRICATION CONDOS OVER TRADITIONAL CONDOS

1. **Speed of Construction**: Prefabrication Modular condos can be built much faster than traditional condos since they are constructed off-site in a factory and then transported to the construction site. This means that construction time can be reduced by up to 50%, which can result in significant cost savings.
2. **Cost Savings**: Prefabrication Modular condos are typically less expensive than traditional condos due to the standardized manufacturing process, lower labor costs, and reduced waste. Additionally, since the building components are manufactured in a controlled environment, the materials used are often more efficient and durable, which can result in long-term cost savings for the owners.
3. **Quality Control**: The manufacturing process for Prefabrication modular condos is highly controlled, which results in consistent quality across all units. The building components are manufactured to strict specifications and undergo rigorous testing before they are shipped to the construction site. This ensures that the final product is of high quality and meets all building codes and regulations.
4. **Sustainability**: Prefabrication Modular condos are typically more environmentally sustainable than traditional condos since the manufacturing process produces less waste and uses fewer resources. Additionally, many prefabricated condo manufacturers use sustainable materials and incorporate energy-efficient features, such as solar panels, geothermal, and high-performance insulation.
5. **Flexibility**: Prefabrication Modular condos offer a high degree of design flexibility since they can be customized to meet the specific needs and preferences of the owners. This means that buyers can choose from a wide range of floor plans, finishes, and features to create a living space that is tailored to their lifestyle.

Prefabricated Modular Condominiums Can Be a Viable Solution for Affordable Housing, as they offer a fast and cost-effective way to provide high-quality housing. However, it is important to carefully consider the benefits and limitations of this approach, and to work closely with local officials and stakeholders to ensure that the project meets all applicable regulations and requirements.

Prefabricated Modular Units are Built to Meet the Necessary Building Codes and Standards, and to work with experienced and reputable manufacturers and contractors to ensure that the project is completed safely and to a high standard of quality. Additionally, it may be necessary to consider the long-term maintenance and durability of the prefabricated units, as well as their environmental impact and energy efficiency. Overall, while there are benefits to using modular condominiums for affordable housing, it is important to carefully evaluate all of the factors involved and to make informed decisions based on the specific needs and requirements of the project.

Prefabricated Modular Condos offer Several Advantages over Traditional Condos, including speed of construction, cost savings, quality control, sustainability, flexibility, and energy efficient. There are advantages for townhouses over modular condos, such as more flexibility in design and customization, and a greater sense of ownership since townhouses often come with their own land.

Ultimately, the choice between a modular prefabricated condo and a townhouse will depend on the individual's needs and preferences and costs. However, townhouses are more expensive and are not affordable for most people.

PREFABRICATED MODULAR CONDOS OVER TOWNHOUSES FOR AFFORDABLE HOUSING IN TODS

1. Prefabricated Modular condos and townhouses are both types of housing that offer several advantages over traditional on-site construction methods. Prefabricated condominiums are units that are built off-site in a factory or facility and then transported to the construction site, where they are assembled into a multi-unit building. Townhouses, on the other hand, are typically built on-site and are individual units that are attached to one another in a row.
2. One advantage of Prefabricated Modular condominiums is that they can be built much faster than traditional construction methods. Because the units are built in a factory, they can be produced quickly and with high precision, which can save time and reduce construction costs. Additionally, modular condominiums can offer more flexibility in terms of design and customization options, as the units can be easily modified to meet the needs and preferences of different buyers.
3. Townhouses, on the other hand, typically offer more living space than condos and can provide a greater sense of privacy, as each unit is separate from the others. Prefabricated Modular Condominiums are more affordable than townhouses which make them a more attractive option for buyers on a budget.

4. Ultimately, the decision to build Modular condominiums or townhouses will depend on a variety of factors, including the location, zoning regulations, target market, and budget. Developers should carefully consider the pros and cons of each option and choose the one that best meets the needs of the project and target audience.
5. Modular prefabricated modular condos are becoming an increasingly popular option in the construction industry due to its potential benefits such as speed, cost savings, and sustainability.
6. In the case of condominiums, prefabricated modular construction can offer several advantages. For example, it can reduce the overall construction time and cost since the units are manufactured offsite in a controlled environment and then transported to the construction site for assembly. Additionally, prefabricated construction can lead to higher quality buildings, as the manufacturing process allows for more precision and consistency in construction.
7. It is important to note that there may also be potential drawbacks to prefabricated construction. For instance, the limited customization options for prefabricated units could limit design flexibility and potentially impact the marketability of the units.
8. To pursue prefabricated modular construction for condominiums will depend on several factors, including local building codes, market demand, and project goals. It is recommended that thorough research and analysis be conducted before making any decisions on the matter.
9. **Cost-Effectiveness**: prefabricated modular construction is generally more cost-effective than traditional construction methods, as it allows for greater efficiency in material usage and reduces construction time.
10. **Sustainability:** prefabricated modular construction also has the potential to be more sustainable, as it often involves the use of environmentally friendly materials and can reduce waste generated during construction.
11. **Increased Housing Availability**: With the growing demand for housing in many urban areas, prefabricated modular condominiums can help to increase the availability of affordable housing options for residents.
12. **Faster Construction Time**: prefabricated modular construction can be completed more quickly than traditional construction methods, which can help to address the urgent need for housing in some areas.
13. **Quality Control**: prefabricated modular construction allows for greater quality control in the manufacturing process, which can help to ensure that the finished product is of a high standard

PREFABRICATED MODULAR CONDOMINIUMS FOR PURPOSE-BUILT RENTAL AND AFFORDABLE HOUSING

14. The use of prefabricated modular units for affordable housing is a promising approach that can significantly reduce costs and shorten construction time. It is essential to ensure that the units meet all the necessary building codes and standards to ensure the safety and comfort of residents.
15. The demand for affordable housing continues to rise, and the need for innovative housing solutions has become more critical than ever before.
16. Prefabricated Modular condominiums have gained popularity as a cost-effective and efficient housing solution that can be constructed quickly, efficiently, and reducing housing costs for tenants and developers alike.
17. It is important to ensure that prefabricated modular condominiums meet the necessary building codes standards, are of high quality and durability, in addition to being energy-efficient and environmentally sustainable; and
18. The suitability of prefabricated modular condominiums for purpose-built rental and affordable housing projects has not been extensively evaluated.

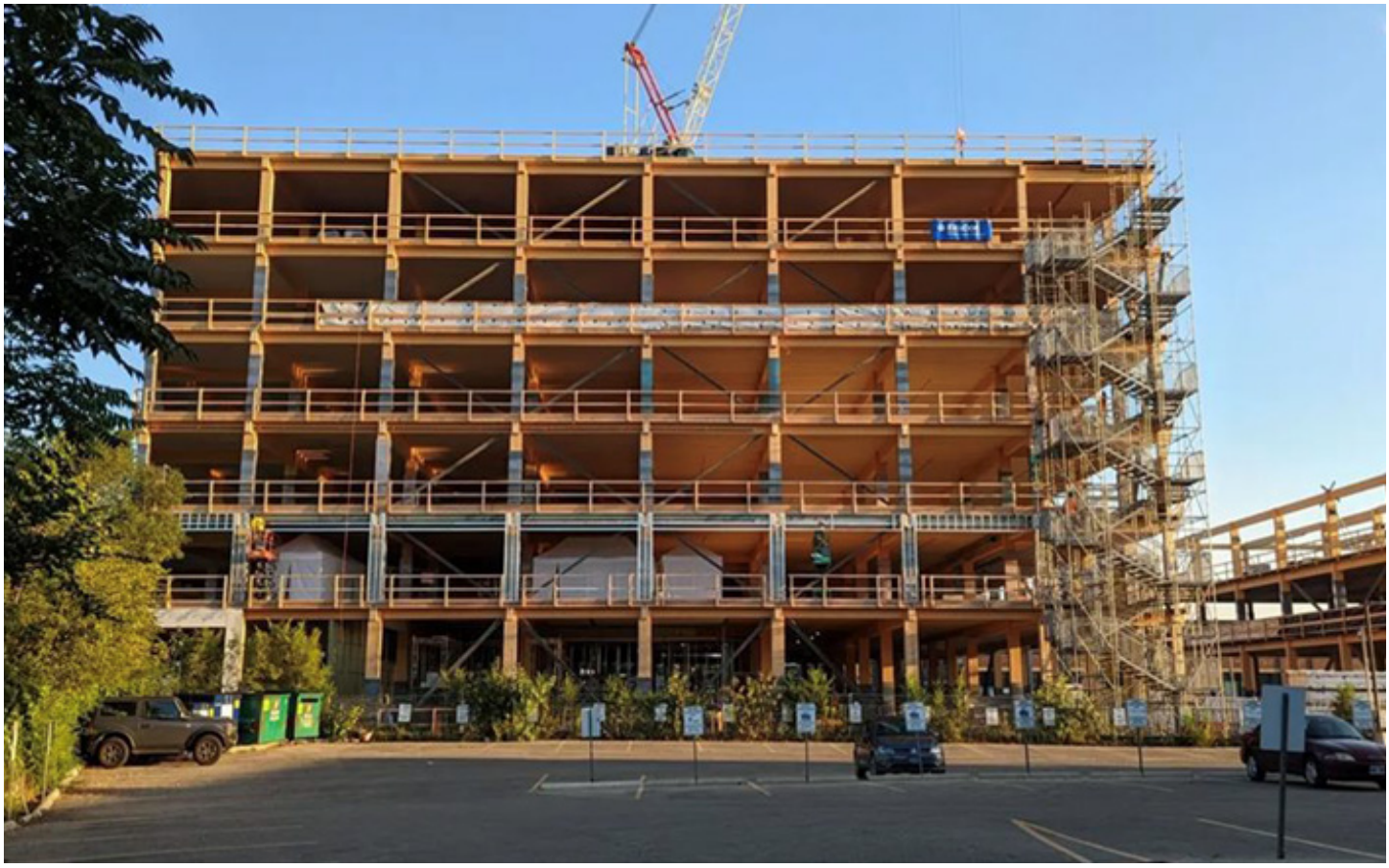


Figure 6. **Six Storey Prefabricated Modular Condominium (60 units) (with Underground Parking)**

AFFORDABLE HOUSING IS A CRITICAL ISSUE THAT AFFECTS INDIVIDUALS, COMMUNITIES, AND SOCIETIES AS A WHOLE:

1. **Basic Human Need**: Affordable housing is essential for everyone to have a safe, stable, and comfortable place to live. It fulfills a basic human need for shelter, ensuring that individuals and families have a suitable place to call home.
2. **Economic Stability**: Access to affordable housing is crucial for economic stability and growth. When housing costs consume a significant portion of a person's income, it can lead to financial strain, preventing them from meeting other basic needs, saving, or investing in education and business opportunities.
3. **Poverty Alleviation**: Affordable housing plays a significant role in poverty alleviation. It helps lift individuals and families out of poverty by providing them with a secure and affordable place to live. Stable housing creates a foundation for personal and financial well-being, enabling individuals to focus on other aspects of their lives, such as education, employment, and health.
4. **Health and Well-being**: Affordable housing has a direct impact on people's health and well-being. Inadequate or unaffordable housing can lead to overcrowding, substandard living conditions, and increased exposure to environmental hazards, which can result in physical and mental health problems. Affordable housing promotes better overall health outcomes and improves quality of life.
5. **Community Development**: Affordable housing contributes to the development and revitalization of communities. When people can afford to live in the areas where they work or have access to necessary amenities, it fosters a sense of community and social cohesion. Affordable housing also supports local businesses, schools, and other services, promoting neighborhood stability and growth.

6. **Social Equity**: Access to affordable housing is a matter of social equity and justice. It ensures that people of diverse backgrounds, including low-income individuals, families, and marginalized communities, have equal opportunities to secure safe and affordable housing. Affordable housing policies aim to reduce socioeconomic disparities and create more inclusive societies.
7. **Homelessness Prevention**: Affordable housing plays a crucial role in preventing homelessness. By providing affordable options and supportive services, it helps individuals and families at risk of homelessness maintain stable housing. Stable housing is the foundation for addressing other issues that may contribute to homelessness, such as mental health, addiction, or financial instability.
8. **Economic Productivity**: Affordable housing is linked to economic productivity. When workers can afford housing near their workplace, it reduces commuting time and costs, increases productivity, and supports a stable workforce. Affordable housing also attracts businesses and encourages job growth, benefiting the local economy.
9. **Long-term Cost Savings**: Investing in affordable housing can lead to long-term cost savings for governments and communities. When individuals have access to stable housing, it reduces the strain on emergency shelters, healthcare systems, and other public services. Preventing homelessness and providing affordable housing is often more cost-effective than dealing with the consequences of housing insecurity.
10. **Social Stability**: Affordable housing contributes to social stability by reducing housing-related stress, displacement, and the risk of homelessness. It creates a more equitable and cohesive society where individuals and families can thrive, fostering a sense of belonging and social stability.

It is clear that affordable housing is not just a concern for individuals directly affected by housing affordability challenges. It is a fundamental issue that impacts the well-being, economy, and overall fabric of communities and societies as a whole. Overall, the concept of a complete TOD is intended to provide a sustainable, walkable, and livable community that reduces reliance on cars and encourages active transportation like walking, bicycling, autonomous vehicles in a geofenced environment and public transit.

Markham Planning staff undertake a comprehensive evaluation of prefabricated modular condominiums as a potential solution for purpose-built rental and affordable housing projects. This evaluation will provide valuable insights into the feasibility and suitability of using modular condominiums for purpose-built rental and affordable housing projects. Inform decision-making processes for developers, policymakers involved in affordable housing initiatives:

A review of the feasibility of using prefabricated modular condominiums for purpose-built rental and affordable housing projects, including an analysis of the cost-effectiveness and efficiency of the construction process.

An assessment of the potential benefits and drawbacks of prefabricated modular condominiums compared to traditional construction methods for purpose-built rental and affordable housing projects.

An evaluation of the environmental impact of prefabricated modular condominiums and their potential for energy efficiency and sustainability.

A review of the necessary building codes and standards that must be met by prefabricated modular condominiums to ensure safety, quality, and durability.

An analysis of the long-term maintenance and repair costs of prefabricated modular condominiums, as wellas their potential for resale value.

An examination of the experience and expertise of manufacturers and contractors involved in prefabricated modular condominium construction. A review of case studies or examples of successful prefabricated modular condominium projects for purpose-built rental and affordable housing, both domestically and internationally. Prefabricated Modular condominiums and townhouses are two different types of residential properties:

MODULAR PREFABRICATION CONDOS

Construction: Prefabricated Modular condominiums are built off-site and then transported to the site, where they are assembled. Townhouses, on the other hand, are typically built on-site, from the ground up.

Ownership: Prefabricated Modular Condominiums are owned by individuals, but they own only the interior of the unit, while the common areas and exterior of the building are owned collectively by all the unit owners. Townhouses, on the other hand, are owned entirely by the individual owner, including the exterior and any surrounding land.

Amenities: Prefabricated Modular Condominiums often come with amenities such as swimming pools, gyms, and other shared facilities, while townhouses typically have fewer amenities, if any at all.
Cost: Prefabricated Modular condominiums tend to be less expensive than townhouses because the construction process is more efficient and there is less waste. Additionally, with condominiums, the cost of maintaining and repairing the common areas and exterior of the building is shared among all the unit owners.

Privacy: Townhouses generally offer more privacy than condominiums because there are no shared walls with other units. However, the level of privacy can vary depending on the design of the development.

Maintenance: Prefabricated Modular Condominiums generally require less maintenance than townhouses because the exterior and common areas are maintained by the homeowner's association. Townhouse owners are responsible for maintaining their own exteriors and any surrounding land.

Customization: Townhouses may offer more opportunities for customization than condominiums because owners have more control over the design and layout of their property. With condominiums, changes to the exterior or common areas typically require approval from the homeowner's association.

The Choice Between a Prefabricated Modular Condominium and a Townhouse comes down to Personal Preference and Individual needs and affordability. Both Types of Housing Offer Their Own Unique Advantages and Disadvantages. Mid-rise and high-rise condominiums in complete Transit Oriented Communities, which are mini towns, include residential, shopping, jobs, parks, restaurants, sporting and entertainment destinations, multi-storey elementary schools co-located with municipal facilities, tanking storm ponds and putting parkland on top. TODs are designed to provide easy access to public transportation while also incorporating a mix of residential, commercial, and public amenities within walking distance.

Mid-rise and high-rise condominiums are common components of TODs, as they allow for a high population density and efficient use of space. The inclusion of shopping, jobs, parks, restaurants, and entertainment destinations creates a vibrant and diverse community that encourages residents to stay and play close to home.

In addition, the integration of municipal facilities within multi-storey public and separate elementary school's buildings, tanking stormwater ponds and putting parkland on top helps create a sense of community and shared responsibility for public spaces. The adoption of modular prefabricated condominiums instead of townhouses can free up valuable green space for the community.

Figure 7. **Modular Prefabrication Condominiums**

Figure 8. **Future Mainstreet Streets and Corridors**

Figure 9.**Future Mainstreet Streets and Corridors**

Figure 10. **New Capstan Way Station - Canada Line Elevated Track**

Figure 11. **Oakridge Station - Canada Line Elevated Track**

Figure 12. **REM's Deux-Montagnes Station Elevated Track**

Figure 13. **Gantry Crane - Lifts 50 ton of railbed for elevated track on the REM Line in Place**

ELEVATING THE RAIL BED TRACK CREATES THE BEST URBAN DESIGN SOLUTION

DIGITAL TWINS:

PROOF OF CONCEPT FOR DIGITAL TWINS

3D DIGITAL Modelling For ALL THE Stouffville GO Line TODs

3D Printing of all STOUFFVILLE Line Markham's TODs

" DIGITAL TWINS BRIDGING THE PHYSICAL AND VIRTUAL REALMS"

8

APPENDIX

Notice of Motion: DIGITAL TWINS Bridging the Physical and Virtual Realms
Moved by: Regional Councillor Jim Jones
Seconded by: Councillor Keith Irish

COMPLETE DESTINATION TODs TRANSIT CORRIDOR PLANNING

Plan the Stouffville TOD Corridor using 3D modelling software and digital twin software tools to create a comprehensive destination transit corridor line plan. The ultimate goal is to create the Stouffville Corridor's 3D Digital TOD Models to-scale. By employing this type of urban corridor planning, with regular meetings, this 3D models spatially planned, detail, should help mitigate NIMBYism (Not In My Backyard) concerns.

1. **IDENTIFY A PILOT GEOGRAPHY IN THE MARKHAM CENTRE** SUITABLE FOR DEVELOPING A DIGITAL TWIN.
2. **DATA COLLECTION AND ANALYSIS:**
   - Gather geographic and topographical data of the rail corridor and its surrounding areas.
   - Obtain existing infrastructure plans, such as railway tracks, stations, and other relevant assets.
   - Collect data on all TODs and their individual requirements, including station designs, tracks, and platform layout, and electrification requirements
3. **3D MODELLING AND DIGITAL TWIN CREATION:**
   - Utilize specialized 3D modelling software and Digital Twins creation, (Autodesk Maya, 3DS Max, Blender, Houdini, Substance 3D, Rhino, AuTODAD, SketchUp, Revit, ArcGIS)
   - Develop a comprehensive 3D model of all the existing and proposed TOD stations on the Stouffville rail corridor, incorporating accurate geographical features, existing infrastructure, and proposed changes.
   - Create separate digital twins for each TOD's station area accurately representing their individual station designs, tracks, platforms, and amenities.
   - Ensure the 3D TOD models and digital twins are created to scale, reflecting the real-world dimensions of the rail corridor TODs' plans and layouts.
4. **VISUALIZATION AND RENDERING**:
   - Apply appropriate textures, materials, and lighting to enhance the visual representation of the 3D model.
   - Generate realistic renderings and animations to showcase the proposed Stouffville corridor and the appearance of each TOD's station and area.
   - Utilize virtual reality (VR) or augmented reality (AR) technologies to provide immersive experiences and interactive exploration of the proposed corridor.
5. **3D PRINTING AND SPATIALLY SCALE TOD MODEL CREATION:**
   - Prepare 3D model for digital presentations and 3D printing, spatially optimized for the desired printed output size.
   - Utilize a 3D printer capable of producing the exact detail of the model within the required specifications.
   - Print the scaled 3D model using appropriate materials to achieve the desired level of detail and durability.
6. **TENDER A REQUEST FOR QUALIFICATIONS FOR APPROPRIATE FIRMS TO UNDERTAKE THE CREATION OF A DIGITAL TWIN:**
   - Solicit proposal for qualified firms to undertake work of creating a digital twin of the Markham Centre"
   - Research and identify urban planning firms that specialize in 3D Transit Corridor Modelling and digital twin creation and modelling.
   - Consider firms with a proven track record in transportation, urban planning, corridor, and infrastructure design.
   - Evaluate the firms based on their experience, expertise, client testimonials, and portfolio showcasing successful 3D Digital Twins planning and modelling projects.

The resulting to-scale 3D Digital Twins or 3D printed models will enable stakeholders and communities to visualize the proposed changes effectively, potentially reducing concerns related to NIMBYism. With space in our cities at a premium, and with 70% of the world's population expected to live in urban areas within the next few decades, there's less room for trial-and-error when it comes to urban planning – decisions made today having critical impacts on the future.

What if there was a way to test and analyze different scenarios first, before ever breaking ground? That's the thinking behind "digital twins" that are being made of cities all over the world, including Shanghai, New York, Singapore, and Helsinki. Using real-time data and artificial intelligence, digital twins become virtual, living mirrors of their physical counterparts – providing opportunities to simulate everything from infrastructure and construction to traffic patterns and energy consumption

Markham Centre 3D Digital Twins

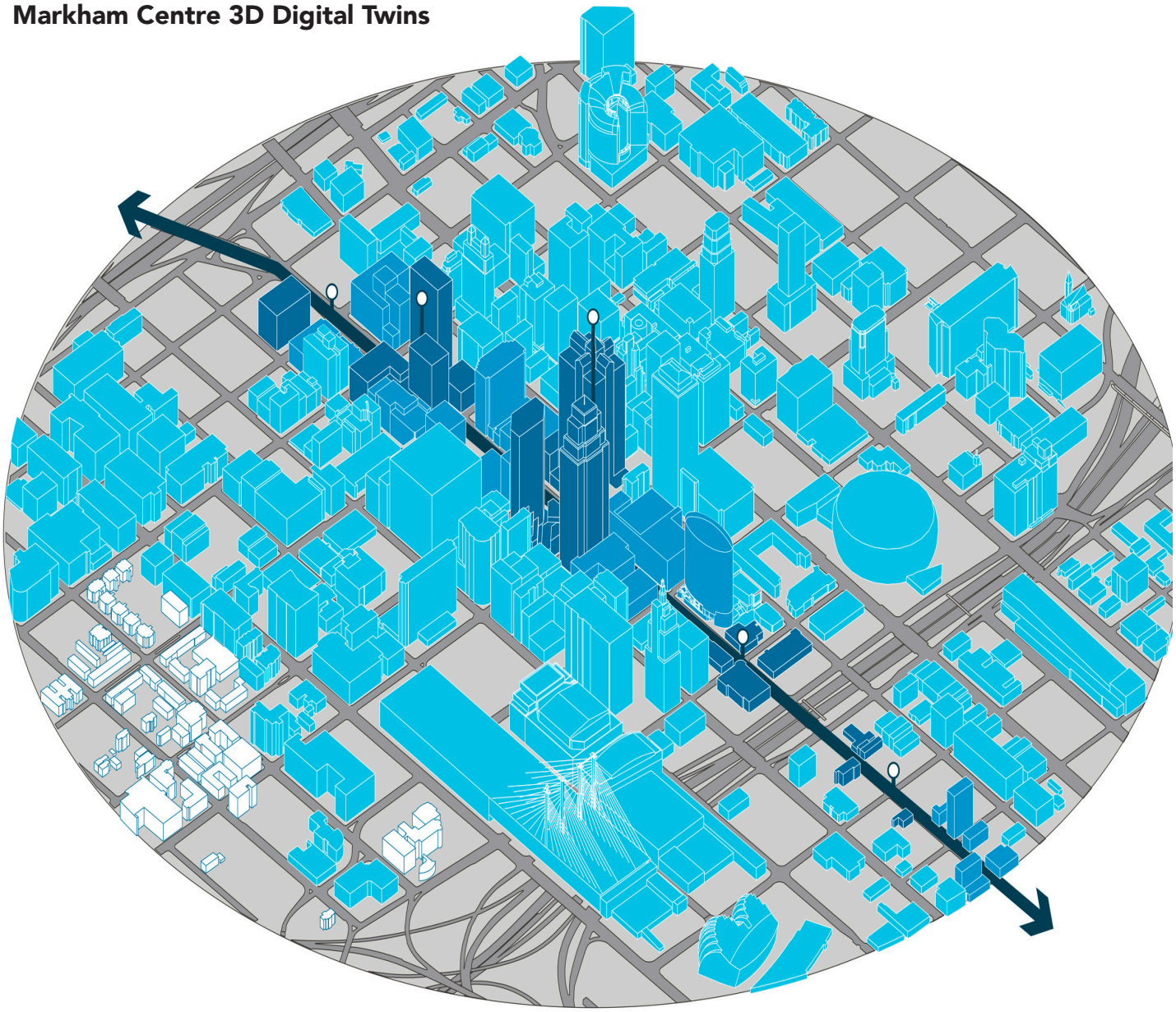


Figure 15.**TOD Solution for Better City Planning**

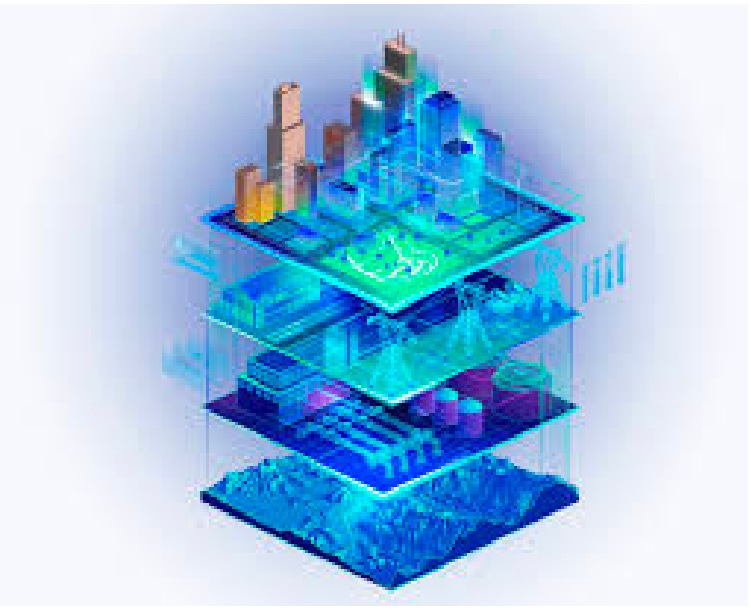


Figure 14.**Digital Twins 3D City**

WHAT ARE DIGITAL TWINS?

A DIGITAL TWIN is a virtual representation of the real world, including physical objects, processes, relationships, and behaviors. GIS creates digital twins of the natural and built environments and uniquely integrates many types of digital models.

GEOSPATIAL TECHNOLOGY connects different types of data and systems to create a single view that can be accessed throughout the complete project life cycle. GIS enhances data capture and integration, enables better real-time visualization, provides advanced analysis and automation of future predictions, and allows for information sharing and collaboration.

DIGITAL TWINS: BRIDGING THE PHYSICAL AND VIRTUAL REALMS

In the rapidly evolving landscape of technology, the concept of "digital twins" has emerged as a revolutionary paradigm that promises to bridge the gap between the physical and digital worlds. Rooted in the Internet of Things (IoT), simulation technologies, and data analytics, digital twins offer a dynamic and holistic representation of real-world objects, systems, and processes in a virtual environment. This innovative approach holds immense potential across industries, from manufacturing and healthcare to urban city planning and beyond.

DEFINING DIGITAL TWINS:

At its core, a digital twin is a virtual counterpart or representation of a physical entity, be it an individual component, an entire system, or even an entire city. This virtual representation is not a static model, but rather a dynamic, real-time reflection that evolves in sync with its physical counterpart. The continuous exchange of data between the physical object and its digital twin facilitates monitoring, analysis, prediction, and optimization.

A DIGITAL TWIN CONSISTS OF SEVERAL KEY COMPONENTS:

1. **PHYSICAL OBJECT**: This is the real-world entity for which the digital twin is created. It could be a machine, a building, a vehicle, a patient, or any other entity that generates data.
2. **SENSORS AND IOT DEVICES**: These are the instruments that collect data from the physical object. They can include temperature sensors, motion detectors, cameras, GPS devices, and more.
3. **DATA COMMUNICATION**: The data collected by sensors is transmitted to the digital twin through the Internet or other communication proTODols. This real-time data stream is crucial for maintaining an accurate and up-to-date representation.
4. **DIGITAL MODEL:** The digital twin includes a detailed, virtual model of the physical object. This model might include various attributes such as geometry, material properties, and behaviors.
5. **ANALYTICS AND AI:** Advanced analytics and artificial intelligence are employed to analyze the data collected from the physical object and generate insights. This can involve predictive maintenance, performance optimization, anomaly detection, and more.
6. **VISUALIZATION AND INTERACTION**: Users interact with the digital twin through intuitive interfaces that offer visualizations and controls. This can range from simple dashboards to immersive augmented or virtual reality environments.

APPLICATIONS OF DIGITAL TWINS:

1. **MANUFACTURING**: In manufacturing, digital twins are used for product design, process optimization, and quality control. They allow manufacturers to simulate and test changes before implementing them in the physical world.
2. **HEALTHCARE**: Digital twins of patients can help in personalized medicine, treatment optimization, and remote monitoring. They offer insights into an individual's health condition and aid in predicting potential issues.
3. **SMART CITIES**: Urban planners and policymakers can leverage digital twins to design and manage cities more effectively. They can simulate the impact of infrastructure changes, optimize energy consumption, and enhance overall livability. This assists in sustainable urban development and efficient resource management.
4. **AEROSPACE AND AUTOMOTIVE**: In the aerospace industry, digital twins are used to monitor aircraft performance, predictive maintenance needs, and enhance safety.
5. **ENERGY AND UTILITIES**: Digital twins of energy systems enable real-time monitoring and optimization of power generation and distribution, leading to improved efficiency and reliability.

DIGITAL TWINS CHALLENGES AND FUTURE PROSPECTS:

Despite their promise, digital twins face challenges such as data security, integration with existing systems, and the complexity of creating accurate models. Additionally, the ethical implications of the vast amount of data collected raise concerns about privacy and consent.
Looking ahead, advancements in AI, machine learning, and simulation technologies will likely contribute to more sophisticated and accurate digital twins. As the technology matures, industries will increasingly rely on these virtual counterparts to drive innovation, streamline processes, and make data-driven decisions that impact both the digital and physical worlds.

THE ESSENCE OF DIGITAL TWINS

Digital Twins is an advanced technology that allows for the creation of virtual replicas of physical objects, systems, or environments. In the context of urban planning, a Digital Twin of the city would be a dynamic, data-driven model that accurately represents its infrastructure, buildings, transportation networks, utilities, and more. This virtual representation would be continuously updated with real-time data, providing planners with valuable insights into the city's current state and potential future scenarios.

THE ADVANTAGE:

1. **DATA-INFORMED DECISION MAKING**: Digital Twins enable city planners to make informed decisions based on real-time data. This technology would allow Markham's officials to analyze current traffic patterns, energy consumption, and other crucial metrics to optimize resource allocation and urban design.
2. **PREDICTIVE ANALYSIS**: By simulating various scenarios within the Digital Twin, Markham's planners can predict the outcomes of different development strategies. This can lead to more effective disaster preparedness, land use planning, and transportation optimization.
3. **PRECISION PLANNING:** The implementation of Digital Twins will empower Markham's city planners with unparalleled precision. Complex scenarios can be simulated in real time, allowing for informed decision-making and the anticipation of potential outcomes before they transpire.
4. **FUTURISTIC INFRASTRUCTURE**: Embracing Digital Twins reflects Markham's commitment to being at the forefront of technological advancement. By adopting such transformative technology, we send a clear signal that our city is prepared to embrace the future and explore innovative solutions.
5. **RESILIENCE AND SUSTAINABILITY**: With the ability to model different scenarios, we can enhance our city's resilience to various challenges such as traffic congestion, environmental changes, and disaster management. This technology empowers us to envision and build a more sustainable future.
6. **ENGAGEMENT AND TRANSPARENCY**: The integration of Digital Twins facilitates enhanced citizen engagement. By visualizing plans and proposals in an interactive digital environment, we foster transparency, inclusivity, and meaningful public participation in shaping our city's destiny.

IMPLEMENTATION STRATEGY:

1. **DATA INTEGRATION**: Gather data from various sources such as sensors, satellite imagery, and city databases to create a comprehensive model.
2. **MODEL DEVELOPMENT**: Collaborate with technology partners to develop a dynamic and accurate Digital Twin model of Markham.
3. **VISUALIZATION AND INTERACTION**: Develop an intuitive interface that allows planners and residents to interact with the Digital Twin, exploring different scenarios and data visualizations.
4. **DATA SECURITY**: Implement robust cybersecurity measures to safeguard sensitive city data.
    - Incorporating Digital Twins technology into Markham's city planning processes can revolutionize the way the city grows and evolves. The benefits of informed decision-making, enhanced public engagement, and sustainable urban development align perfectly with Markham's vision future.
    - An RFQ be developed and placed on the market for the construction of a digital twin so that the capital outlay can be properly assessed. Further, it may be desirable to proposed a pilot digital twin of the Markham Centre with the goal towards evaluation evaluating the benefits of such technology as well as whether it would make sense to expand it across the municipality.
    - The proposed Digital twin initiative would build on the city's legacy of innovation and dovetails with iniatives such as the innovation hub, smart cities challenge, digital Markham and the Markham Centre's Smart City initiative.

DEVELOPMENT-ORIENTED TRANSIT

Planning a development-oriented transit community involves designing a neighborhood or community that prioritizes efficient and sustainable transportation options. This type of community is designed to minimize reliance on private vehicles, promote public transportation, walking, biking, and other eco-friendly modes of transit. Here's a comprehensive guide to help you plan a development-oriented transit community:

5. **LOCATION SELECTION**: Choose a location that is well-connected to existing transit infrastructure or has the potential for future transit development. Proximity to employment centers, schools, shopping centers, and recreational areas is also important.
6. **MULTI-MODAL TRANSPORTATION**: Incorporate a variety of transportation options, such as buses, light rail, subways, bike lanes, pedestrian pathways, and ridesharing services, to provide residents with convenient alternatives to private cars.
7. **TRANSIT-ORIENTED DEVELOPMENT (TOD)**: Design the community with a mix of residential, commercial, and recreational spaces around transit hubs. This encourages residents to live, work, and play within walking distance of public transportation.
8. **DIVERSE HOUSING OPTIONS:** Provide a range of housing types and sizes to accommodate different demographics, including families, singles, seniors, and individuals with various income levels. This diversity promotes a sense of community and accessibility.
9. **WALKABILITY AND ACCESSIBILITY**: Create a pedestrian-friendly environment with wide sidewalks, crosswalks, and well-designed intersections. Ensure that key destinations are within a 10-minute walk from residential areas.
10. **BIKING INFRASTRUCTURE**: Implement dedicated bike lanes, bike-sharing programs, and secure bike storage facilities to encourage cycling as a viable mode of transportation.
11. **GREEN SPACES**: Integrate parks, plazas, and green spaces throughout the community. These areas not only enhance the aesthetics but also provide places for recreation and relaxation.
12. **MIXED-USE DEVELOPMENT:** Combine residential, commercial, and recreational spaces within the same area to reduce the need for long commutes and to foster a sense of community.
13. **TRANSIT INTEGRATION**: Collaborate with local transit agencies to ensure seamless integration of community transportation options with the broader public transit network.
14. **SMART MOBILITY SOLUTIONS**: Implement technologies such as real-time transit information, digital payment systems, and ride-sharing apps to make transportation more convenient and efficient.
15. **PARKING MANAGEMENT**: Minimize parking spaces for private vehicles to discourage car usage. Offer shared parking lots and prioritize parking for car-sharing services and electric vehicles.
16. **AFFORDABILITY AND INCLUSIVITY**: Ensure that the community remains affordable and accessible to people of all income levels. Consider mixed-income housing options and affordable transportation choices.
17. **COMMUNITY ENGAGEMENT:** Involve residents, stakeholders, and local authorities in the planning process. Gather feedback and address concerns to create a community that meets the needs of its future inhabitants.
18. **SUSTAINABILITY**: Implement eco-friendly practices such as renewable energy sources, efficient waste management, and green building standards to reduce the community's environmental impact.
19. **ADAPTABILITY:** Design the community to be adaptable to future changes in transportation technology and urban development trends.
20. **PUBLIC SPACES AND AMENITIES**: Design public gathering spaces, community centers, and other amenities that encourage social interaction and foster a sense of belonging.
21. **PROMOTE ACTIVE LIFESTYLE**: Encourage physical activity by providing fitness facilities, jogging trails, and sports courts within the community.
22. **EDUCATION AND AWARENESS**: Educate residents about the benefits of transit-oriented living, sustainable transportation choices, and the reduction of carbon emissions.
23. **MONITORING AND FEEDBACK**: Continuously monitor the effectiveness of the transportation systems and gather feedback from residents to make necessary adjustments.
24. **PUBLIC ART AND CULTURAL ELEMENTS:** Integrate public art installations and cultural elements that enhance the overall ambiance and identity of the community.

Each community is unique, tailor these principles to fit the specific needs and context of the development-oriented transit communities. Collaborate with urban planners, architects, transportation experts, and local authorities to create a vibrant, sustainable, and connected neighborhood that sets a positive example for future developments.

WHAT IS A VISUAL PREFERENCE SURVEY AND STUDY?

A visual preference survey and study are tools used in urban planning, architecture, and design to gather public opinions about the visual qualitiest of different environments, landscapes, buildings, and urban elements. These tools aim to understand people's preferences for various visual aspects and aesthetics, such as architectural styles, building materials, landscaping, signage, and overall urban design. The collected data can then be used to inform urban planning decisions, design guidelines, and development projects to align with the preferences of the local community.

DESIGNING STIMULI: Researchers select a set of visual stimuli, which could be images, photographs, sketches, or designs. These stimuli might include various styles, colors, compositions, and features to capture a range of aesthetic qualities.

PARTICIPANT RECRUITMENT: Participants for the study are recruited, often from a diverse demographic pool, to ensure a representative sample. The size of the sample can vary depending on the research goals and resources.

SURVEY SETUP: Participants are presented with the visual stimuli, usually in the form of a survey or presentation. They might view these stimuli in person, on a computer screen, or through virtual reality tools.

RATING AND RANKING: Participants are then asked to rate or rank the stimuli based on their preferences. Ratings can be given on a numerical scale (e.g., 1 to 10) or through other mechanisms. Ranking involves arranging the stimuli in order of preference.

DATA COLLECTION AND ANALYSIS: Once participants complete the survey, researchers gather and analyze the data. Statistical analysis can reveal patterns and trends in participants' preferences. Researchers might look for correlations between preferences and factors like age, gender, cultural background, or personal experiences.

INTERPRETATION: The findings from the study are interpreted to draw conclusions about the preferences of the participants. These conclusions can provide insights into design principles, aesthetic trends, and factors that influence visual perception.

APPLICATIONS: Visual preference surveys and studies have various applications. They are used in fields such as architecture, urban planning, marketing, graphic design, and product development. For example, architects might use the results to design buildings that align with public preferences, or marketers might tailor their campaigns based on visual elements that resonate with their target audience.

COMMUNITY ENGAGEMENT: Involve the local community in the planning process from the beginning, giving them a sense of ownership and control over the changes.

MITIGATION STRATEGIES: Address concerns and negative impacts through design modifications, traffic management plans, environmental protections, etc.

ECONOMIC AND SOCIAL CONSIDERATIONS: Highlight the economic benefits and potential improvements to local amenities that the project might bring.

EDUCATION: Provide information about the project's broader significance and how it fits into long-term city planning.

COMPROMISE: Seek middle ground that addresses community concerns while also meeting development goals.

It's important to note that preferences are subjective and can vary greatly among individuals. Visual preference surveys provide a way to capture and analyze these subjective responses in a structured and quantitative manner.

Overall, visual preference surveys and studies contribute to our understanding of aesthetics, design principles, and the psychology of visual perception.

WILL A VISUAL PREFERENCE SURVEY AND STUDY HELP ELIMINATE NIMBYISM?

NIMBYISM (Not In My Backyard-ism) refers to the resistance or opposition that residents often express toward new development projects, infrastructure, or other changes in their immediate vicinity, even if these changes might be beneficial to the larger community. NIMBYism can arise for various reasons, including concerns about property values, traffic congestion, environmental impact, and changes to the character of the neighborhood.

While a visual preference survey and study can provide valuable insights into what elements of design and aesthetics are preferred by the community, it may not directly eliminate NIMBYism on its own. NIMBYism is often rooted in complex social, economic, and psychological factors that go beyond just visual preferences. These factors might include fear of change, mistrust of developers or authorities, concerns about local infrastructure, and worries about potential negative impacts on the quality of life.

Conducting a visual preference survey and study can be a useful component of a larger community engagement strategy. By involving local residents in the design and planning process and considering their preferences, you might increase the likelihood of gaining community support for new projects. Additionally, using visual tools can help make the proposed changes more tangible and easier to understand for the general public.

To effectively address NIMBYism, a holistic approach is needed, which may include:

TRANSPARENT COMMUNICATION: Clearly communicate the benefits and potential drawbacks of the proposed changes to the community.

COMMUNITY ENGAGEMENT: Involve the local community in the planning process from the beginning, giving them a sense of ownership and control over the changes.

MITIGATION STRATEGIES: Address concerns and negative impacts through design modifications, traffic management plans, environmental protections, etc.

ECONOMIC AND SOCIAL CONSIDERATIONS: Highlight the economic benefits and potential improvements to local amenities that the project might bring.

EDUCATION: Provide information about the project's broader significance and how it fits into long-term city planning.

COMPROMISE: Seek middle ground that addresses community concerns while also meeting development goals.

Therefore, while a visual preference survey and study can contribute to a more informed and community-centered approach to urban planning, they are just one piece of the puzzle when it comes to addressing NIMBYism. A comprehensive strategy that takes into account a range of social, economic, and psychological factors is necessary for effectively managing opposition to development projects.

REDUCING NIMBYISM:

There are several ways to reduce NIMBYism. One way is to increase public participation in the planning process. This can be done by holding public meetings, workshops, and other events where residents can voice their concerns and opinions about proposed developments.

Another way is to provide more information about the proposed development, such as its benefits and potential drawbacks. This can help residents understand the need for the development and how it will impact their community.

Additionally, it is important to address residents' concerns about the development and work to find solutions that will mitigate any negative impacts.

Finally, it is important to engage with residents throughout the development process and keep them informed about any changes or updates. By doing so, developers can build trust with residents and help reduce NIMBYism.

OPPOSITION TO ELEVATED RAIL TRANSIT TRACKS in residential communities can stem from a variety of concerns that residents may have. To alleviate these fears:

COMMUNITY ENGAGEMENT AND EDUCATION: Engage with the local community early in the planning process. Hold public meetings, workshops, and information sessions to explain the benefits of the transit system, address concerns, and provide accurate information about noise levels, safety measures, and the potential positive impacts on the community.

NOISE MITIGATION: Implement noise-reducing measures such as sound barriers, noise insulation, and the use of quieter track materials. Demonstrating the effectiveness of these measures through simulations and case studies can help ease residents' concerns about noise pollution.

AESTHETIC DESIGN: Collaborate with architects and urban designers to create aesthetically pleasing rail structures that blend in with the surrounding environment. Incorporating greenery, art installations, and thoughtful design elements can make elevated tracks more visually appealing.

PROPERTY VALUE STUDIES: Share studies or data showing that well-planned and well-integrated transit systems can actually have a positive effect on property values by increasing accessibility and reducing congestion in the area.

SAFETY MEASURES: Clearly communicate safety measures that will be implemented, such as fencing, surveillance cameras, and lighting. Highlight successful safety records of similar transit systems in other areas.

ALTERNATIVE ROUTES AND LOCATIONS: Consider alternative routes or alignment adjustments that could minimize the impact on residential areas while still achieving the transportation goals.

ELEVATING THE TRACKS ON THE STOUFFVILLE GO LINE IN CERTAIN SECTIONS VERSUS GRADE SEPARATIONS:

Everyone is prone to reduce the complexity of urbanism to a problem solvable by their own profession, and risks being dismissive of the expertise of other professions' points of view. When a group of architects proposes that a major new transit investment should be made slower and more expensive to operate in order to foster a better streetscape, as is happening in Honolulu, one hopes that they have thought through the urbanist consequences of all the people who'll be in cars instead of on transit because the transit is too slow, infrequent, and unreliable.

Unfortunately, this argument is both incorrect and out of date. At $300 million per km, it will never be affordable to extend the subway into the suburbs. Surface rail lines, some of which already have GO commuter services, can be upgraded, but they don't serve all the places people want to go. Surface light rail has its place, but elevated and automated transit is emerging as the best way to provide a service fast enough in suburban areas to attract people out of their cars, at an affordable price.

It's a model that has proven successful in Vancouver, Montreal, Dubai, Paris, London, Copenhagen, and a dozen other cities. No, the lines aren't invisible, but the slender structures (about one-quarter the width of the Gardiner) arguably enhance the suburban environments through which they run. More importantly, they carry new transit riders to their destination quickly, take cars off the road and reduce congestion.

The Honolulu elevated rail system mentioned in the article runs through an urban corridor that is denser than Eglinton. Elevated transit lines are also much cheaper than subways to operate and maintain.

Metrolinx's own numbers show that surface light rail, as planned along Eglinton East, Sheppard and Finch, will attract few new riders. These lines will actually make traffic worse, by taking away three lanes on a road that is already congested. Metrolinx data also show that an elevated light rail line on Eglinton East would attract about three times as many new transit riders as the surface line currently planned, delivering a service like a subway at a third of the price, and with a better view for the riders too.

And ultimately, isn't attracting new riders to transit a way to relieve congestion what transit investment is all about?

OLYMPIC GOALS:

AN OLYMPIC DREAM can be important for a child for several reasons, though it's worth noting that not all children necessarily need to have Olympic dreams to lead fulfilling lives. However, for those who do aspire to Olympic-level achievements, here are some reasons why it can be significant:

GOAL SETTING AND DISCIPLINE: An Olympic dream encourages a child to set ambitious goals and work diligently to achieve them. This process instills discipline, time ccmanagement, and a strong work ethic that can be valuable life skills.

HEALTHY LIFESTYLE: Pursuing an Olympic dream often involves engaging in regular physical activity and maintaining a healthy lifestyle. This can contribute to physical fitness, overall well-being, and a reduced risk of health problems later in life.

PERSONAL GROWTH: The journey towards an Olympic dream involves facing challenges, setbacks, and victories. These experiences contribute to personal growth, resilience, and the development of important life skills like perseverance and adaptability**.**

HEALTHY LIFESTYLE: Pursuing an Olympic dream often involves engaging in regular physical activity and maintaining a healthy lifestyle. This can contribute to physical fitness, overall well-being, and a reduced risk of health problems later in life.
PERSONAL GROWTH: The journey towards an Olympic dream involves facing challenges, setbacks, and victories. These experiences contribute to personal growth, resilience, and the development of important life skills like perseverance and adaptability.

TEAMWORK AND COLLABORATION: Many Olympic sports require teamwork, whether it's through training with teammates or representing a country as part of a larger team. Learning to collaborate with others and work towards a common goal is a valuable skill.

CONFIDENCE AND SELF-ESTEEM: Progressing towards an Olympic dream involves achieving milestones and overcoming obstacles. This can boost a child's confidence and self-esteem, helping them believe in their abilities both within and beyond their chosen sport.

CULTURAL EXCHANGE AND DIVERSITY: The Olympics are a global event that brings people from different cultures and backgrounds together. Aspiring to participate can foster an appreciation for diversity, cultural exchange, and global unity**.**

SETTING A POSITIVE EXAMPLE: An Olympic dream can inspire others, especially peers and younger generations, to pursue their own dreams and aspirations. It can serve as a positive role model for determination and perseverance.

EDUCATION AND SCHOLARSHIP OPPORTUNITIES: Many young athletes who strive for the Olympics can gain access to education and scholarship opportunities through sports programs, which can help them balance their athletic pursuits with academics.

PERSONAL PASSION AND JOY: For some children, the pursuit of an Olympic dream is driven by a deep passion for their sport. The joy and fulfillment they experience from participating and excelling in their chosen activity can be incredibly rewarding.

It's important to note that while having an Olympic dream can offer these benefits, the emphasis should be on the journey, personal growth, and overall well-being of the child. Unrealistic pressure, overemphasis on winning at all costs, and neglecting other aspects of a child's development can have negative consequences. Balancing the pursuit of an Olympic dream with a well-rounded childhood experience is key.

WHY MASTERPLAN THE STOUFFVILLE GO LINE AT THE CORRIDOR LEVEL?

Planning rail transit oriented development at the corridor level as opposed to one station at a time offers several advantages that can lead to more efficient, integrated, and impactful developments:

- **HOLISTIC DEVELOPMENT**: Corridor-level planning allows for a broader and more comprehensive approach to development. By considering multiple stations and their surrounding areas together, planners can create a coherent and integrated vision for the entire corridor. This approach enables better coordination of land use, transportation, and infrastructure, resulting in a more seamless and connected community.
- **TRANSIT EFFICIENCY**: When planning at the corridor level, the focus is on optimizing transit services for the entire corridor, not just individual stations. This can lead to better scheduling, more efficient use of resources, and improved connectivity between stations. Passengers benefit from smoother and faster journeys as transit systems can be designed to minimize transfer times and provide consistent service.
- **ECONOMIC DEVELOPMENT**: Corridor-level planning can attract more substantial investment and development opportunities. Developers and businesses are often attracted to corridors with planned transit oriented development, as they see the potential for a larger customer base and improved accessibility. This can lead to more significant economic growth and job opportunities along the entire corridor.
- **LAND USE COORDINATION**: Coordinating land use planning at the corridor level allows for a more thoughtful allocation of land for various uses, such as residential, commercial, and recreational spaces. This coordination helps prevent the piecemeal developmetnt that can occur when planning station by station, resulting in a more balanced and sustainable community.
- **COMMUNITY CONNECTIVITY**: Planning at the corridor level encourages the creation of pedestrian-friendly pathways, bike lanes, and other non-motorized transportation options that connect various stations and surrounding areas. This promotes active transportation and enhances the overall liveability of the community.
- **CONSISTENCY IN DEVELOPMENT STANDARDS**: Planning at the corridor level facilitates the establishment of consistent design and development standards across the entire corridor. This leads to a more cohesive aesthetic and functional environment, avoiding abrupt transitions between different station areas.
- **PUBLIC ENGAGEMENT**: Corridor-level planning allows for more effective public engagement. Communities can provide input on the overall vision and priorities for the entire corridor, fostering a sense of ownership and involvement in the planning process.
- **ENVIRONMENTAL CONSIDERATIONS**: By planning at the corridor level, environmental impacts can be assessed and mitigated on a broader scale. This might include evaluating the overall ecological footprint, preserving green spaces, and implementing sustainable practices that benefit the entire corridor.

Corridor-level planning takes a more holistic approach that considers the greater context and potential synergies between multiple stations and their surroundings. This approach can lead to more sustainable, vibrant, and well-connected transit oriented development that effectively address the needs of residents, businesses, and the environment.

Planning the Corridor to determine its potential:

- Passenger Trips a day: 400,000 by 2063.
- Housing Units by 2060: 400,000 condo units by 2063.
- Jobs created over next 37 years: 400,000 jobs by 2063.

Masterplanning the Stouffville Corridor
Justification for Corridor Masterplan Study for the Stouffville GO Transit Line.

WHAT IS THE DIFFERENCE BETWEENTRANSIT ORIENTED DEVELOPMENT AND TRANSIT SUPPORTIVE COMMUNITIES?

Transit-Oriented Development (TOD) and Transit-Supportive Communities are related concepts, but they have distinct characteristics and objectives. Here's an overview of the key differences between the two:

TRANSIT-ORIENTED DEVELOPMENT (TOD):

1. **FOCUS ON DEVELOPMENT**: TOD primarily emphasizes the development of land and properties near transit stations or corridors. It encourages high-density, mixed-use development, such as residential, commercial, and recreational facilities, in close proximity to transit nodes.
2. **PROXIMITY TO TRANSIT:** TOD places a strong emphasis on proximity to transit infrastructure, often within walking distance (typically a quarter to a half-mile) of transit stations or stops. This encourages people to use public transportation for their daily commutes and activities.
3. **REDUCED RELIANCE ON CARS**: The goal of TOD is to reduce reliance on personal vehicles by providing convenient access to public transit options, making it easier for residents to live car-lite or car-free lifestyles.
4. **URBAN DENSITY:** TOD often results in higher urban density, which can lead to more efficient land use, reduced sprawl, and a more pedestrian-friendly environment.

TRANSIT-SUPPORTIVE COMMUNITIES (TSC):

1. **BROADER SCOPE:** Transit-Supportive Communities have a broader scope and focus on creating urban or suburban environments that support public transportation use. This concept isn't limited to specific transit stations or corridors.
2. **TRANSIT INTEGRATION**: While Transit-Supportive Communities encourage transit use, they may not necessarily be located within a specific walking distance of transit stops. Instead, they can be designed to provide transit access through various means, such as shuttle services or well-planned bus routes.
3. **COMPREHENSIVE PLANNING**: Transit-Supportive Communities consider a wider range of planning elements, including land use, transportation networks, infrastructure, and policies. They aim to create communities where transit is just one element of a larger, well-integrated urban or suburban plan.
4. **DIVERSE HOUSING TYPES**: These communities may include various types of housing, not limited to high-density developments. They can have a mix of housing options, including single-family homes, apartments, and townhouses, with an emphasis on affordability and accessibility.

In summary, the primary difference between Transit-Oriented Development and Transit-Supportive Communities lies in their scope and focus. TOD is more specific and concentrated around transit nodes, promoting high-density development, while Transit-Supportive Communities take a broader, more holistic approach to urban and suburban planning that encourages transit use throughout the community, even if it's not necessarily within walking distance of transit stops. Both concepts aim to enhance public transportation use and reduce car dependency, but they do so in different ways and contexts.

WHAT IS THE DIFFERENCE BETWEEN DEVELOPMENT-ORIENTED TRANSIT AND TRANSIT ORIENTED COMMUNITIES?

"DEVELOPMENT-ORIENTED TRANSIT" AND "TRANSIT-ORIENTED COMMUNITIES" are related concepts in urban planning and transportation, but they focus on different aspects of urban development and transportation planning. Here's an explanation of the key differences between the two:

DEVELOPMENT-ORIENTED TRANSIT (DOT):

Development-Oriented Transit (DOT) primarily emphasizes the role of transit systems and infrastructure as catalysts for urban development and economic growth. The primary goal of DOT is to shape and guide urban development around transit nodes, such as subway stations, bus stops, or light rail stations.

- Key features of Development-Oriented Transit include:
- Encouraging higher-density development around transit hubs to promote mixed land uses, walkability, and accessibility.
- Fostering public and private investments in transit infrastructure and related amenities to support growth.
- Implementing zoning and land use policies that allow for increased density and diverse land uses near transit stations.
- Focusing on creating vibrant, attractive, and economically viable urban environments around transit nodes.

TRANSIT-ORIENTED COMMUNITIES (TOC):

- Transit-Oriented Communities (TOC) is a broader concept that encompasses not only the transportation and land use aspects but also places a strong emphasis on creating communities that are livable, sustainable, and connected through efficient and accessible transit systems.
- Key features of Transit-Oriented Communities include:
- Interating land use and transportation planning to create mixed-use, pedestrian-friendly neighborhoods.
- Promoting affordable housing and equitable development, ensuring that different income groups have access to transit and amenities.
- Designing public spaces, parks, and community facilities that enhance the quality of life for residents.
- Emphasizing environmental sustainability and reduced reliance on private cars, encouraging cycling and walking.
- Balancing transit infrastructure with the preservation of community character and historic features, where applicable.

Development-Oriented Transit primarily focuses on how transit infrastructure can drive urban development and economic growth.

Transit-Oriented Communities take a more comprehensive approach, considering various social, economic, and environmental factors to create livable, sustainable, and well-connected communities that are transit-friendly. Both concepts are important in modern urban planning to address issues of congestion, environmental sustainability, and the quality of life in urban areas.