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Date: 12/14/2018 9:42:45 AM

Subject: Memo: Smart Cities Challenge Joint Application Update

Attachments: Memo_Paul Mochrie_MayorCouncil_SCC Joint Application_December 11 2018.pdf
Initial Application - Submitted April 2018.pdf
Smart City Challenge Application Overview.pdf
Call for Innovation Addendum.pdf

Dear Mayor and Council,

On April 24, 2018, the Cities of Vancouver and Surrey submitted a joint application to the Infrastructure Canada Smart City Challenge with a focus on Mobility and Safety and Security. The application was framed around the following challenge statement:

"Surrey and Vancouver will implement Canada's first two collision-free multi-modal transportation corridors, leveraging autonomous vehicles and smart technologies to demonstrate the path to safer, healthier and more socially connected communities while reducing emissions, improving transportation efficiency and enhancing livability in the face of rapid growth and traffic congestion."

Our joint application was selected as one of the top five finalists, and both cities are now in the process of composing the final application, which is to be submitted by March 5, 2019.

The attached memo and its addenda provide background information and a status update on the joint application that the City of Vancouver and City of Surrey have submitted to the Infrastructure Canada Smart Cities Challenge. We will provide you with ongoing updates in the New Year.

Please let me know if you have any questions at this time.

Thank you,
Paul

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MEMORANDUM

December 11, 2018

TO: Mayor and Council

CC: Sadhu Johnston, City Manager
Jerry Dobrovolny, General Manager, Engineering Services
Lynda Graves, Administration Services Manager, City Manager's Office
Rena Kendall-Craden, Civic Engagement and Communications Director
Katrina Leckovic, City Clerk
Neil Monckton, Chief of Staff, Mayor's Office
Alvin Singh, Communications Director, Mayor's Office
Anita Zaenker, Chief of Staff, Mayor's Office
Jessie Adcock, Chief Technology Officer
Lon LaClaire, Director, Transportation

FROM: Paul Mochrie
Deputy City Manager

SUBJECT: Smart Cities Challenge Joint Application Update

The purpose of this memo is to provide background information and a status update on the joint application that the City of Vancouver and City of Surrey have submitted to the Infrastructure Canada Smart Cities Challenge.

BACKGROUND

Over the next three decades, more than one million new residents will make Metro Vancouver their home. The arrival of these new residents will contribute to the vibrancy and diversity of the region, but the rapid growth and densification will also add to mobility challenges related to safety and quality of life that already affect people living and working in Surrey, Vancouver, and the surrounding municipalities.

Through Surrey and Vancouver's engagement in developing the Smart Cities Challenge proposal, residents told us that mobility is the focus area they deem most fitting for smart city solutions. It comes as no surprise; it is a part of almost every resident's daily life, and one that impacts their safety, health, environment, access to opportunities, and prosperity.

Through a confluence of smart mobility technologies, Surrey and Vancouver propose to address mobility challenges by implementing Canada's first two collision-free multi-modal corridors that leverage autonomous vehicles and smart mobility technology. We are also using the Smart Cities Challenge as an opportunity to attract leading smart mobility technology and autonomous vehicle companies to participate in our program. Our aim is to implement a suite of solutions

that deliver cascading improvements in safety, sustainability, transportation efficiency, health, and social connectedness while providing an innovative mobility model for cities across Canada.

The Infrastructure Canada Smart Cities Challenge

On April 24, 2018, the Cities of Vancouver and Surrey submitted a joint application to the Infrastructure Canada Smart City Challenge with a focus on Mobility and Safety and Security. The application was framed around the following challenge statement:

“Surrey and Vancouver will implement Canada’s first two collision-free multi-modal transportation corridors, leveraging autonomous vehicles and smart technologies to demonstrate the path to safer, healthier and more socially connected communities while reducing emissions, improving transportation efficiency and enhancing livability in the face of rapid growth and traffic congestion.”

To deliver the foregoing objectives, the two identified corridors will be equipped with smart solutions related to:

- Autonomous shuttles;
- Smart mobility infrastructure;
- Advanced data and analytics; and
- Enhanced user experience.

The joint Surrey-Vancouver proposal is the result of an extensive and inclusive engagement with our residents and a strong alliance between our two cities, which is reflected in a formal Memorandum of Understanding and the #SmarterTogether branding for the partnership.

The Cities received letters of support for the proposal and/or partnership commitments from the following parties:

- TransLink
- University of British Columbia (UBC)
- Simon Fraser University (SFU)
- Our External Advisory Panel, with letters of support collected from:
 - Deloitte
 - United Way of the Lower Mainland
 - Surrey Schools
 - Fraser Health Authority
 - Port of Vancouver
 - BC Tech Association
 - Greater Vancouver Board of Trade
 - BC Institute of Technology
 - Canada’s Digital Technology Supercluster Consortium
 - Vancouver Airport Authority
- Canadian Urban Transit Research and Innovation Consortium (CUTRIC)
- Insurance Corporation of British Columbia (ICBC)
- Honourable Bruce Ralston, Minister of Jobs, Trade and Technology, Province of British Columbia
- National Association of City Transportation Officials (NACTO)

In total, 225 communities across Canada participated in the Smart Cities Challenge with 130 eligible applications received by Infrastructure Canada by the April 24, 2018 deadline. On June 1, 2018 Infrastructure Canada announced the top 20 communities that will advance to the next phase of the competition including:

- Five communities in the 20,000 or under population category competing for the \$5 million grand prize;
- Ten communities in the 500,000 or under population category competing for the \$10 million grand prize; and
- Five communities in the 500,000 or higher population category competing for the \$50 million grand prize.

The Cities' joint application was selected as one of the top five finalists in the \$50-million prize category. Each of these five short-listed finalists has received \$250,000 from Infrastructure Canada that has been used towards the cost of developing their respective final submissions.

The Cities are now in the process of composing the final application, which is to be submitted by March 5, 2019. This final submission must identify specific projects for implementation and funding.

For the purpose of identifying and scoping those projects, the Cities issued an open Call for Innovation and have received over 200 proposals from software and Internet of Things (IoT) vendors, transportation infrastructure manufacturers, telecommunications suppliers, consultants and advanced sensor, device, and hardware providers. We are presently working through an evaluation of the proposals against a set of requirements that reflect the overall aims for the initiative and the adjudication criteria for the Smart Cities Challenge.

It is also our intention to establish a "Design for All" Advisory Community. We will actively engage groups representing our diverse community and a broad range of interests to partner with us on the design of the corridors.

The Corridors

The Vancouver South False Creek Innovation Corridor

Vancouver's collision-free South False Creek Innovation Corridor will employ information and communication technologies that ensure the safe movement of people using various modes of transportation on three routes in one of the city's busiest and most scenic areas. Autonomous shuttles will be a central feature in the collection of smart mobility technologies that make up the corridor. These will serve as a pilot for wider-scale deployment of the technology throughout the region as a 'first-mile/last-mile' transit-supporting solution, and accelerate our transportation system's advance toward electrification and enhanced safety.

The three-kilometer South False Creek Innovation Corridor will be located south of False Creek, extending between popular tourist destinations Granville Island and Science World, and connecting with the False Creek South and Olympic Village communities. Three routes will comprise the corridor. These are:

1. West 4th, West 6th, and West 2nd Avenues; multi-lane vehicle and transit arterials.
2. The Seaside Bypass; a local street comprised of Lamey's Mill Road, Charleson Park, Moberly Road, Commodore Road, and West 1st Avenue.
3. The Seaside Greenway/Seawall between Granville Island and Science World; a waterfront walking and cycling path.

The location is adjacent to an emerging technology innovation hub and includes three major commercial districts (Granville Street, Cambie Street, and Olympic Village), popular destinations for tourists and residents, and a major health precinct and hospital site. Major annual events occur in this area, including the Sun Run and Dragon Boat Festival.

Additional details, including diagrams are found in the attached document entitled "Call for Innovation – Smart Cities Challenge – Addendum III – Corridor V.pdf".

The Surrey Corridor

Surrey City Centre is undergoing a bold transformation from a suburban town centre to a walkable, high density, and transit-oriented downtown. The improved safety resulting from a smart mobility transportation network, catalyzed by the Smart Cities Challenge, will accelerate this transformation.

The City of Surrey is implementing its collision-free corridor in two stages:

Stage 1: The one-year University Drive Pilot will test technologies, and deploy automated shuttles in exclusive rights-of-way to allow time for changes in legislation that will permit on-road deployment of automated vehicles. During this period the Cities will provide ongoing communication of the benefits of this project to the public.

Stage 2: The Innovation Boulevard Corridor will follow the University Drive Pilot and feature full deployment of smart city technology, infrastructure, and strategies, incorporating the learnings from the Pilot.

The two-stage approach provides the opportunity for the application to demonstrate the "replicability and scalability" of the proposed projects to other cities, which is a key requirement under the Infrastructure Canada Smart Cities Challenge criteria. This approach also provides technology providers the opportunity to demonstrate how smart mobility technology can be built into a city's developing infrastructure instead of overlaid upon an existing urban inner-city.

Roadway infrastructure, energy distribution, and fibre optic networks are being significantly upgraded to transform these areas from their current focus on single family residential use to a new focus on high density, high technology, and high efficiency. These areas will be further transformed in the next five years with the expansion of Skytrain.

Additional details, including diagrams are found in the attached document entitled "Call for Innovation – Smart Cities Challenge – Addendum III – Corridor V.pdf."

Recent Milestones and Next Steps

Several important milestones have been achieved as of late, as reflected below.

Activity	Completed
Complete Corridor Designs	September 2018
Issue Vendor Call for Innovation	September 2018
Host Vendor Information Session	October 2018
Hire Program Director to assist with Final Application	November 2018
Hire Owner's Engineers as Subject Matter Experts	November 2018

Over the course of the next four months, the Cities will be devoting their respective staff resources to complete the activities reflected below.

Activity	Proposed Completion
Complete Vendor Evaluation and Secure Strategic Partnerships	January 2019
Host Smart Cities Challenge Event in Surrey Civic Plaza to encourage community engagement	Early February 2019
Submit Final Joint Application	March 5, 2019
Infrastructure Canada announcement of winners of each category	Summer 2019
Implementation period (winners)	2019 - 2023

We will keep Council apprised of our work to finalize the submission. Please let me know if you require any additional information at this time.



Paul Mochrie
Deputy City Manager

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ATTACHMENTS:

1. Initial Application – submitted April 2018



smart-cities-challenge-
application.pdf

2. Smart City Challenge Application Overview – summary note prepared for previous council - prepared May 2018



smart-cities-challenge-
application (1)_Summ.

3. Call for Innovation Addendum III outlines the vision for the addendum issued to vendors in October 2018 to provide more detailed technology proposals for the development of collision-free smart transportation corridors in each city. Proponents have until December 21, 2018 to provide their proposals.



Call_for_Innovation_-
_Smart_Cities_Challen



smart cities challenge application

A COLLABORATIVE PROJECT OF THE CITY OF SURREY AND CITY OF VANCOUVER

SMART IDEAS START HERE



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Question 1:

Please provide information on the community that is submitting this application.

If this application is being submitted by a group of communities, add each community separately using the button. If this application is being submitted by a regional entity, please include the name of the regional entity with each individual community (e.g. City of Dunn/Smith Region). Do not include the regional entity as a separate, stand-alone community.

Community: City of Vancouver
Name of community: City of Vancouver
Province or Territory: British Columbia
Population based on: 631,486
Indigenous community: No



Community: City of Surrey
Name of community: City of Surrey
Province or Territory: British Columbia
Population based on: 517,887
Indigenous community: no



Question 2:

Please select a prize category.

- \$50 million (all population sizes)
- \$10 million (population under 500,000 residents)
- \$5 million (population under 30,000 residents)

Prize category selected is \$50 million.

Question 3:

Please define your Challenge Statement in a single sentence that guides your preliminary proposal. It should describe the outcome (or outcomes) you hope to achieve.

Surrey and Vancouver will implement Canada's first two collision-free multi-modal transportation corridors, leveraging autonomous vehicles and smart technologies to demonstrate the path to safer, healthier and more socially connected communities while reducing emissions, improving transportation efficiency and enhancing livability in the face of rapid growth and traffic congestion.
#SmarterTogether



Question 4:

Please describe the outcome (or outcomes) your proposal seeks to achieve by elaborating on your Challenge Statement.

4.1 – Introduction

Over the next three decades, more than one million new residents will make Metro Vancouver their home. The arrival of these new residents will contribute to the vibrancy and diversity of the region, but the rapid growth and densification will also add to mobility challenges related to safety and quality of life that already affect people living and working in Surrey, Vancouver, and the surrounding municipalities.

Through Surrey and Vancouver’s community-first joint approach to the Smart Cities Challenge, our residents told us that mobility is the focus area they deem most fitting for smart city solutions. It comes as no surprise; it is a part of almost every resident’s daily life, and one that impacts their safety, health, environment, access to opportunities, and prosperity.

Our cities have challenges regarding mobility. Vancouver is currently ranked as having the most severe congestion of all Canadian cities according to the TomTom Traffic Index, a leading measure of traffic movement.¹ Our cities also experience an aggregate of over 75,000 collisions among motorists, cyclists, and pedestrians each year, ranging in consequence from unfortunate inconvenience to tragic fatality.

Through a confluence of smart mobility technologies, Surrey and Vancouver will address mobility challenges by implementing Canada’s first two collision-free multi-modal corridors that leverage autonomous vehicles and smart mobility technology. As the two largest cities in British Columbia, representing over a million people combined, we are taking an ambitious step toward removing the safety risk that our residents must consider each time they move through their cities to get to work, enjoy their communities, or connect with family and friends.

We are also using the Smart Cities Challenge as an opportunity to attract leading smart mobility technology and autonomous vehicle companies to participate in our program. We will contribute to turning Canada into a global leader in autonomous vehicle technology.

While achieving zero collisions in our corridors within a five-year timeframe is our primary focus, we developed this proposal understanding that the benefits of our smart technology-enabled corridors extend beyond safety. Our implementation will have cascading benefits that improve the environment, transportation efficiency, health, and social connectedness while providing an innovative mobility model for cities across Canada.

¹ TomTom Traffic Index. 2016.



(Question 4 Con't)

4.2 - Mobility Presents Major Problems for Metro Vancouver residents

To develop this proposal, Surrey and Vancouver reached out to residents to learn which smart city focus areas appealed to them most. Through an unprecedented joint engagement strategy that included street teams, social media surveys, and an online idea submission platform, we listened to ideas from people living and working in our communities. Of the over 250 smart city ideas proposed, nearly 40% were related to mobility, more than doubling the submissions related to the second-leading focus area.

The interest in mobility has provided us with the unique opportunity to improve a critical aspect of transportation: safety.

Consider the problem that collisions among motorists, cyclists, and pedestrians presents:

- 32,000 collisions occur in Surrey every year, resulting in an average of 20 fatalities, 150 serious injuries, and 12,800 minor injuries
- 45,000 collisions occur in Vancouver every year, resulting in an average of 15 fatalities, 300 serious injuries, and 10,000 minor injuries.
- traffic-related injuries are the second highest cause of serious injuries reported at Vancouver General Hospital, comprising nearly 20% of emergency room arrivals.

Looking more closely, collisions disproportionately affect the lives of particular groups:

- 30% of collision fatalities in Surrey and 40% in Vancouver are seniors, an important concern considering the region's aging population
- pedestrians comprise 42% of motor vehicle fatalities in Surrey, and 60% of transportation fatalities in Vancouver (despite being involved in only 2% of collisions)

The Smart Cities Challenge has galvanized our cities, and inspired us to bring the collision rate down to zero in two Surrey and Vancouver corridors.

4.3 - The Corridors

The Surrey corridor will be a 3.4-kilometer route that connects Surrey Memorial Hospital and other key services to a major transit hub. The corridor will leverage connectivity infrastructure in Surrey's Innovation Boulevard, and will be accessible to residents in adjoining low income and social housing, enhancing safety and access to key services for vulnerable people.

The Vancouver corridor will be a two-kilometer route that extends from Granville Island to Science World. Existing infrastructure within the corridor, including that related to the former Olympic Line streetcar, can be leveraged immediately. The corridor will connect social housing communities to essential rapid transit, urban centres, and hubs designed for seamless transfer to other modes of transportation.



(Question 4 Con't)

4.4 - The Surrey-Vancouver Smart City Approach

Our smart city approach involves the implementation of an array of ambitious smart mobility solutions related to:

- autonomous shuttles
- smart mobility infrastructure
- advanced data and analytics
- enhanced user experience

Autonomous shuttles: Autonomous shuttles, operating within the corridors, will eliminate one of the leading contributors to collisions – human error. These autonomous shuttles will provide a pilot for a wider-scale deployment of the technology throughout the region, accelerating the advance of our entire cities toward a collision-free vision and the electrification of our transportation system. Additionally, these shuttles will reduce the negative effects of congestion – which has been shown to have significant impacts on quality of life – by moving people more efficiently.

Smart mobility infrastructure projects: Smart mobility infrastructure projects are the foundation for autonomous shuttles. These projects include sensors deployed in traffic signals, lighting, and other roadway infrastructure that generate data that can be incorporated into real-time signal adjustments that optimize safety and the free-flow movement of people. Combined with wireless connectivity infrastructure, these projects make up the groundwork that will enable autonomous vehicles to perceive and respond in real-time to movement both in their immediate vicinity and throughout the rest of the corridor.

Advanced data and analytics projects: Advanced data and analytics projects involving real-time monitoring, machine learning, and synthesis of data from disparate sources will inform corridor design, signaling, and autonomous vehicle movement to understand, anticipate, and avoid common collision scenarios. Mobility data visualization and a collaborative, secure, and open data platform will enable our cities, agencies, vendors, and citizens to access information generated in our corridors, turn it into valuable insight, and develop projects that optimize the operations of existing connected infrastructure.

Enhanced user experience projects: Enhanced user experience projects related to wayfinding, smart crossings, shared mobility options, and optimized trip planning will increase the seamlessness of our residents' journeys, and enhance the safety, accessibility, fairness, and equity of the transportation system. Enhanced user experience, enabled by better data, will also increase the attractiveness of cycling, walking, and transit as transportation choices and the satisfaction that residents experience using all transportation modes.



4.5 - Smart Mobility Means Safer, Greener, More Connected Communities

Well-designed mobility planning, infrastructure, and services are levers that lift our residents' quality of life in multiple ways. In pursuing our primary outcome of achieving zero collisions in our corridors, we will simultaneously achieve other positive mobility-related outcomes. These include:

- improved safety
- a greener environment
- increased availability of mobility options
- higher people-moving capacity
- increased accessibility
- enhanced travel experience

Improved safety: The most important outcome of our implementation is the elimination of transportation-related fatalities and serious injuries for all who move through our corridors, with solutions taking vulnerable users such as seniors, children, people with disabilities, pedestrians, and cyclists into account. We will achieve substantial safety improvements through technology projects that assist with enforcement, two-way real-time safety communication with travellers, and data analytics to enable enhanced infrastructure treatments and traffic control.

A greener environment: An autonomous electric vehicle shuttle combined with increased use of sustainable modes of transportation like cycling, walking and transit will translate into lower greenhouse gas emissions and a greener environment. The projects in the corridors, like our dynamic curbside parking initiative, will result in a net reduction of greenhouse gas emissions in the project area, which can be measured at a street and intersection scale using means such as Arizona State University's Hestia tool.²

Increased availability of mobility options: Projects will increase awareness and attractiveness of available mobility options, and provide dynamic and real-time information about when walking, cycling, transit, and ride sharing are the best transportation choices. Increased information will also improve the fairness and equity of the transportation system.

Higher people-moving capacity: The corridors lay the groundwork that will allow us to accommodate our cities' population growth without any corresponding contribution to congestion and its accompanying negative impacts on quality of life. This can be measured through vehicle throughput, time in traffic, and walking, cycling, and transit use counts. More efficient mobility also means more time residents get to reclaim and spend with family and friends, leading to more social and connected lives.

Increased accessibility: A corridor equipped with smart technologies can gather and share data that can be used to optimize trip planning specifically for seniors, people with disabilities, and members of other vulnerable populations, reducing barriers to their mobility. Widely deployed, these technologies can also reduce the need to own or travel by private vehicle, a result that can also dramatically reduce household transportation costs.

2 hestia.project.asu.edu



Enhanced travel experience: Our corridors will enhance travel experience by improving the seamlessness of our residents' journeys, even when a single trip involves numerous transportation modes like cycling, walking, and vehicle use. Residents will also experience greater health benefits gained from increased physical activity like walking and cycling, and reduced mental stress from a reduction in frustration related to travel and congestion.

4.6 - Smart Mobility Solutions that Set the Standard for Canada

The mobility problems that Surrey and Vancouver experience exist in other cities as well. Our implementations have the potential to dramatically improve mobility safety, travel experience, and technological readiness in municipalities across Canada. Below is a list of problems common across Canada.

- Collisions remain a major problem for cities. While the number of collisions in Canada is thankfully trending incrementally downward, there are still well over 115,000 collisions each year that result in death or personal injury.³ Our collision-free corridors will provide models for other cities, and represent a major step in the move from incremental transportation safety improvements to exponential progress.
- Canadian cities are experiencing rapid growth. City growth and its downsides for mobility, including the stress that growth puts on a city's mobility systems and resources, are not unique to Metro Vancouver. Statistics Canada reported population growth in 32 of 34 census metropolitan areas across the country 2016-2017, with 27 of those experiencing growth of over 1% year-over-year.⁴ At a national level, population growth is projected to continue for decades.⁵ Innovative mobility solutions will be required to avoid the negative quality of life impacts that come with this growth.
- Canada must close the connected mobility gap. According to a 2017 report by the Information and Communications Council, Canada lags other advanced global jurisdictions when it comes to autonomous vehicle development and deployment.⁶ Surrey, Vancouver, and our communities can take the lead in closing this gap while improving our residents lives and providing the blueprint for autonomous vehicle deployment in Canada.

3 Transport Canada. Canadian Motor Vehicle Traffic Collision Statistics: 2015.

4 Statistics Canada. Canada's population estimates: Subprovincial areas, July 1, 2017.

5 Statistics Canada. Annual average growth rate, natural increase and migratory increase per intercensal period, Canada, 1851 to 2056.

6 ICTC. Autonomous Vehicles and the Future of Work in Canada. 2017.



4.7 - #SmarterTogether: A Partnership and Challenge Designed for Replicability

By partnering and deploying smart mobility technology in Surrey and Vancouver, addressing our overlapping and distinct needs, replicability is baked into the very design of our proposal. The Surrey-Vancouver team has used the Smart City Challenge as an opportunity to develop new and ambitious cooperation, procurement, and technology models that other Canadian cities can study and adopt as they begin to implement smart mobility solutions of their own in the coming years. These include:

- The Surrey-Vancouver partnership model

In December 2017, our two cities signed a memorandum of understanding to come together in a spirit of collaboration to learn how to address the common and distinct needs of our residents. Guided by the principles of transparency, outcome orientation, experimentation, diversity & inclusiveness, empowerment, and knowledge-sharing, we developed joint governance, communication, and decision-making models that have enabled us to combine our expertise, test technology in multiple urban contexts, and share each others' lessons and successes.

- The Call for Innovation procurement model

Our vendor community told us that the conventional procurement process is unnecessarily complex and that it results in slow purchasing cycles that inhibit technological adoption and innovation by government. We listened, and for the Smart Cities Challenge, we designed the Call for Innovation. Based on the traditional Request for Expression of Interest, the Call for Innovation is a new, flexible procurement instrument that enables continuous dialogue and iteration by industry vendors and city procurement offices. The Call for Innovation is an enduring legacy of the Smart Cities Challenge, and Surrey and Vancouver will continue to use this procurement innovation for future technology acquisition.

- Technical architecture, implementation design, and municipal regulatory models

Our corridor implementations will provide models of component deployment, interoperability opportunities, centralized mobility data management, and open data architecture that can be replicated in other corridors throughout our region and in other cities. Our corridors will incorporate leading cybersecurity and privacy measures at every stage of development, providing a blueprint of best practices for collision-reducing smart city technology initiatives across Canada.

- Operational demonstrations in areas of differing density

Our two corridors will demonstrate how smart city mobility infrastructure and design can best be implemented in an area of urban density and an area transitioning from suburban to urban density, providing two models for other regions to replicate.



(Question 4 Con't)

- A new Canadian Mobility Index

The transformation of our corridors into data-rich environments provides our cities with the opportunity to develop a measurement tool that accurately connects quality of life to mobility-related factors such as congestion, seamlessness of travel, accessibility, and fairness of the transportation system. With our ability to gather and analyze detailed mobility data from our corridors on a common platform, we will develop a Canadian Mobility Index, a person-centric measure that reflects the connection between the movement of people and their experiences. Our Smart Cities Challenge implementation will serve as a catalyst to move the transportation industry forward in the new era of data-rich public spaces.

By creating Canada's first two collision-free multi-modal transportation corridors that leverage autonomous vehicles and smart technologies, Surrey and Vancouver have the opportunity to create safer, greener cities for our residents and provide a blueprint for other Canadian communities to do the same for theirs.

Question 5:

Describe how your community residents have shaped your Challenge Statement.

5.1 – Introduction

Our extensive, inclusive, and community-first engagement strategy over the past eight months was central to the development of our Challenge Statement. Using the most innovative public engagement tools available and a novel procurement instrument of our own design, we engaged in authentic and ongoing online and in-person conversations with our residents at every step of the proposal development process. Our Challenge Statement genuinely reflects what our residents say matters most to them, and our process of shaping it aligns with our conviction that we are smarter together.

We carried out our multi-stakeholder engagement plan in two phases:

- Community engagement and education, and
- Consolidation and call for ideas

5.2 - Community Engagement and Education: Kicking Off Conversations & Collaboration

Through multiple digital and in-person channels, we connected with our residents to introduce the Smart City Challenge and listen to what they said about which focus areas mattered most. We asked our residents for their most ambitious ideas, and published them on our platforms to stimulate further idea generation and begin public conversations about smart city ideas and the Smart City Challenge.



(Question 5 Con't)

We wanted our residents to have the opportunity to be heard and to shape their communities. We advertised this opportunity through:

- ongoing press engagement with municipal, provincial, and national media
- paid social media advertising through Facebook and Twitter
- nine outdoor digital display ads in high traffic areas
- high visibility signage in busy pedestrian areas including libraries, both city hall entrances, and recreation facilities
- the #SmarterTogether website

In an unprecedented joint engagement strategy, our two cities worked together to reach out to a broad range of residents with different interests, lifestyles, and concerns. We did this through:

- Multi-lingual street teams in busy Surrey and Vancouver locations: Over the course of multiple days in Surrey and Vancouver, #SmarterTogether staff engaged residents in the region's four most commonly-spoken languages — Cantonese, Mandarin, Punjabi, and English. The street teams reached students, working people, people with disabilities, families, seniors, and residents who may not have access to digital tools to discover which focus areas and smart city solutions resonated with them.
- An interactive citizen idea platform: We created a platform on the #SmarterTogether website to which our residents could submit smart city ideas under any focus area. These ideas were posted publicly on the platform, and anyone could interact with them through upvoting, downvoting, and comments.
- A Civic Tech YVR community idea generation session: We co-hosted an idea generation session with the Civic Tech YVR meetup group, a community of nearly 250 diverse young graduates and tech professionals with an interest in technology projects that impact civic issues.
- #SmarterTogether social media conversations: We engaged residents on Facebook, Twitter, Instagram, and LinkedIn using #SmarterTogether to generate conversations about focus areas. We also used these channels to distribute promotional YouTube videos that explain the challenge and inform our residents about how they can play an active role in developing their cities' futures.
- Surveys and messages through Surrey's CitySpeaks and Talk Vancouver platforms: Both cities have communities of highly engaged residents that have registered to online survey and engagement platforms in order to regularly participate in shaping municipal policy. We sent surveys to these communities to inquire about which focus areas matter, which groups and communities should benefit most from smart city technology, and the degree of innovation they wanted to see in their cities.

Pop up polls: We posted quick surveys on our website, through our social media channels, and at survey stations in our communities to ask residents a single question: What focus areas should we dedicate our smart city efforts toward?



(Question 5 Con't)

- An External Advisory Panel of regional thought leaders: We interviewed thirteen of the most influential leaders in our region to gain diverse perspectives on our communities' most pressing needs and the smart city solutions that could address them.

This phase of our engagement garnered:

- over 5,000 unique visitors to the citizen idea platform
- over 2,600 votes cast for ideas submitted to the #SmarterTogether website
- over 2,200 survey responses
- over 1,000 website pop-up poll submissions
- over 4,100 comments, shares, retweets, replies, and likes
- over 3,400 engaged users and 136,000 people reached
- a total of over 149,000 interactions across all channels

The engagement educated our communities about smart cities and the Smart City Challenge, gathered extensive unfiltered information about our residents' priorities, and prepared a broad cross-section of our residents to imagine ambitious, achievable, and relevant ideas that they could submit in the following phase of our engagement plan.

5.3 - Consolidation and Call for Ideas: Refining the Challenge Statement

Analysis of survey responses, proposed ideas, and conversations between our teams and residents narrowed the conversation to four focus areas: Mobility, Safety & Security, Empowerment & Inclusion, and Environmental Quality.

To explore these four focus areas, we:

- Re-engaged our residents: Through social media and our citizen idea platform, we solicited smart city ideas related only to these top four focus areas.
- Asked vendors for projects via our Call for Innovation: We announced to vendors that they could submit project ideas for review through our flexible Call for Innovation, a procurement instrument that would allow them to adjust their submissions as our focus area became clearer.
- Convened an unprecedented Surrey-Vancouver cross-department internal working group: Comprised of over 70 senior staff from across a multitude of Surrey and Vancouver municipal departments – including engineering, infrastructure, public safety, sustainability, the RCMP, and others – our diverse internal working group built upon the discussions and feedback, and drew from their decades of institutional knowledge to brainstorm potential problem areas and project ideas.
- Conducted open industry sessions: Supported by the team at the Greater Vancouver Board of Trade, we hosted multiple industry update sessions and workshops to create opportunities for feedback and co-creation.



(Question 5 Con't)

These efforts garnered over 250 smart city ideas from residents, over 200 vendor proposals, and thousands of online interactions.

Nearly 40% of the ideas submitted by residents and 50% of those submitted by vendors pertained to mobility. Through our conversations with residents, community associations, staff, and industry, we heard that “mobility is the engine of inclusivity” and “a driver for providing opportunity to everyone, everywhere.” We heard definitively that by enabling people to move around the city more easily, we could foster greener, healthier, and more connected communities.

Mobility also featured prominently among resident ideas and business proposals, with one resident submitting a direct call to action: “Be the first in Canada to enable autonomous vehicles.” This response inspired our Smart Cities Challenge team to approach and work with domain experts and a panel of local thought leaders to identify and craft an ambitious mobility-related proposal with a meaningful, measurable outcome.

We learned that safety is a fundamental concern for our residents. This was informed in part by work done by Vancouver’s Active Transportation Policy Council a civic committee that advises City Council on strategic priorities related to active transportation. The Council made increased safety their top priority and recommendation at their January 2018 meeting. This theme also aligns with our two cities’ common ambition to achieve zero fatalities in our respective transportation systems. Lastly, we learned that addressing problems related to safety in mobility can have benefits that cascade into positive effects on the environment, health, access to opportunities, and prosperity.

Bringing mobility and safety together, we decided to use autonomous vehicles and smart technologies to ambitiously address the problem of collisions through the development of our collision-free multi-modal transportation corridors.

5.4 - Continuing the Conversation

In the development of the final proposal and implementation of our projects, we will keep our community engagement channels open and active, continuously updating our #SmarterTogether website and social media. We will also:

- hold kickoff events for the creation of the new proposal and implementation of projects
- consult vendors and community tech groups, including Civic Tech YVR, on project implementation and open standards architecture
- engage business associations and universities to host events to update vendors and solicit feedback
- continue to encourage resident and vendor submissions to our citizen idea platform and Call for Innovation
- consult a regional Scalability & Adoption Advisory Panel, consisting of surrounding municipalities, to discuss replicability and transferability of projects so that they can leverage our proposal to address the needs in their communities



(Question 5 Con't)

- engage Data Science for Social Good, the SFU Big Data Lab, and other partners to help inform our API strategy and spread the invitation to engage city data to their networks of talented technologists

Engaging our cities' residents in a continuous community-first process provides our team with the confidence that our Challenge Statement, outcomes, and implementation will meet the needs and aspirations of the people who live and work in our region.

Question 6:

Please describe your preliminary proposal and its activities or projects.

6.1 – Introduction

Surrey and Vancouver's smart mobility technology projects will transform the design, management, and use of the transportation system within our two collision-free corridors, enhancing safety, reducing greenhouse gas emissions, increasing accessibility, and enhancing travel experience for our residents.

Through these ambitious projects, Surrey and Vancouver will lead Canada in the era of smart mobility technology. These projects are being implemented in two corridor locations with different characteristics, demonstrating our projects' inherent replicability. Their technical designs and fully-tested implementation toolkits will provide other cities with the blueprint to implement collision-free multi-modal transportation corridors with autonomous vehicles and smart technologies for residents moving through their own communities.

6.2 - Existing Corridors are Primed for Smart City Transformation

Surrey and Vancouver will transform existing, high-activity corridors that are primed for smart mobility technology implementations. It is within these central corridors that our cities will be able to deliver the greatest benefit to our residents.

The City of Surrey's corridor is a 3.4-kilometer route located on the periphery of Surrey's city centre. The corridor connects Surrey Memorial Hospital and the Jim Pattison Outpatient Care and Surgery Centre to a terminus SkyTrain station that services over 19,000 passengers each day. The route connects to suburban roads and a rapidly developing downtown core arterial road that carries more than 40,000 vehicles per day. The corridor will leverage the fiber connectivity infrastructure already in place and used by the health, business, higher education, and government organizations that comprise Surrey's Innovation Boulevard.

The City of Vancouver's corridor is a two-kilometer route between Granville Island and TELUS World of Science through which 35,000 SkyTrain passengers pass and over 37,000 vehicles move each day. The corridor includes an emerging innovation district in the South False Creek neighbourhood, and connects several forms of community housing, popular tourist



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(Question 6 Con't)

destinations, and two community centres. It is the site of the former Olympic Line streetcar, for which feasibility assessments have already been conducted, providing ready-made infrastructure for the transformation.

6.3 - The Projects Comprising our Collision-Free Corridors

There are many factors that contribute to collisions: human error, inclement weather, unadaptable signal timing, and constrained sight lines. An array of well-planned smart city solutions can address these factors. By combining these solutions in two corridors, we aim to reduce collisions to zero within a five-year timeframe.

Our smart city solutions fall into four categories:

- autonomous shuttles
- smart mobility infrastructure
- advanced data and analytics
- enhanced user experience

Autonomous shuttles:

Autonomous shuttles play a key role in enhancing safety within the corridors. Equipped with sensors and onboard intelligence, the autonomous shuttles communicate with traffic infrastructure and other autonomous vehicles to optimize for safe movement. Piloting these vehicles in two separate corridors of differing density will accelerate our ability to effectively deploy this technology throughout the region, and enable a broad range of Canadian cities to replicate our results. Projects related directly to the shuttles include:

- autonomous vehicle electric charging infrastructure installation
- autonomous vehicle connectivity infrastructure deployment, including Dedicated Short Range Communications modules that enable inter-vehicle information sharing and Signal Phase and Timing applications that enable vehicles to communicate with sensors in traffic infrastructure such as street lights and traffic signal controllers
- development of an autonomous shuttle regulatory framework and set of standards

Smart mobility infrastructure:

These projects will transform public infrastructure into intelligent resources that sense activity and environmental conditions in the corridor, and transmit that information to autonomous vehicles and other smart devices that can make real-time adjustments. As they can monitor and communicate information about the entire corridor at once, these projects will reduce inefficient signal timing and human error judging speeds and distances. Projects related to smart mobility infrastructure include:

- adaptive traffic signals that gather real-time weather conditions and traffic information, and adjust operations using predictive optimization techniques to accommodate transit signal priority



(Question 6 Con't)

- connected streetlights that monitor movement and environmental conditions, and adjust lighting to enhance visibility
- parking sensors that communicate parking availability to users in real time, and inform dynamic curbside parking management to better facilitate curb usage
- smart pedestrian crossings that provide longer walk times for specific users, and adapt to changing demands and conditions
- retractable bollards that adjust to open traffic flow or protect public spaces and routes as appropriate
- infrastructure that supports automated enforcement of traffic violations

Advanced data and analytics:

These projects bring data from disparate sources together at a centralized location, organize it, and provide insight on specific collision scenarios and ways to avoid them. Projects related to data and analytics include:

- a common data and information platform that aggregates all corridor data and is accessible to both cities
- an open and secure analytics engine that will enhance our ability to visualize and manage our corridors
- an open and secure data sharing network that is accessible to vendors and the public
- the Canadian Mobility Index (CMI), a project enabled by our access to extensive corridor data, that addresses shortcomings in traditional transportation measurement techniques by accurately connecting mobility-related factors such as congestion, seamlessness of travel, transportation system accessibility to effects on quality of life
- real-time advisories of safety issues and corridor conditions

Enhanced user experience:

These projects are the services and applications that provide new ways for people to engage and navigate the corridors. This is particularly important for our aging population, as seniors are severely and disproportionately affected by collisions. Enhanced user experience projects will also improve the transportation experience for people seeking to reduce dependency on personal vehicles, people with visual impairments, and members of other vulnerable groups. Projects related to user experience include:

- a suite of accessible wayfinding applications and connectivity infrastructure at designated locations
- next generation bike share
- a multi-modal navigation application (via cell phone or digital kiosk) that informs travelers of the greenest (i.e. the route that produces the least amount of CO2 emissions), fastest, or cheapest route to their destination
- smart, connected road signs and lighting that tell drivers and cyclists ideal travel speeds and routing for improved safety and mobility



6.4 - A Staged Transformation

Every project requires a foundation. Smart infrastructure must be integrated with current city infrastructure, connectivity must be prepared, and initial corridor data gathered and analyzed before autonomous vehicles begin moving through the space. To test the technology and evaluate the safety and integration of autonomous vehicles and other projects, the development of the corridors will progress through three phases:

- Foundation: involves the installation of the sensors and connectivity hardware
- Integration: involves the enablement of devices to read and use data gathered by other devices in a corridor using a standard format
- Application: involves complete services, content delivery, and programmed responses that inform and change the corridor in response to real-time conditions
- Measurement: involves monitoring results and benefits that enable continuous improvement

6.5 - Interoperable and Open

Interoperability among devices and sensors is necessary to create a functioning corridor that eliminates collisions. Interoperable systems enable all modes of transportation to interact with infrastructure and communicate conditions and hazards in the corridors. Over the next several months, we will work with industry to fully identify the technical requirements, essential components, and appropriate architecture for interoperability.

While we plan and develop of our corridors, we will stipulate in our Call for Innovation (CFI) procurement instrument that interoperability must be accounted for in all submissions.

With our 'open data-by-default' policy, we will also make data accessible, while ensuring that exposure to cybersecurity risk is limited. Corridor data, available through APIs, will provide opportunities for application developers and innovators to create new products and services that can leverage the technology we deploy.

6.6 - Replicability by Design

The corridors in Surrey and Vancouver each have a mix of common and distinct mobility dynamics. Despite differences, our two cities are using the same proposal to achieve a zero-collision outcome, demonstrating the proposal's inherent replicability. Furthermore, most of the connected technology that we are deploying involve sensor and devices in common existing city infrastructure that all mid-size and large cities already possess.

Other Canadian cities can leverage our lessons, pinpoint their own areas where collisions are a problem, and follow our project roadmap, one that reflects two different city contexts, to install smart mobility technology where it matters most for their own residents.



Question 7:

Please describe the ways in which your preliminary proposal supports your community's medium and long-term goals, strategies, and plans.

7.1 - Introduction

Our #SmarterTogether proposal aligns with transformational digital and smart city strategies that include progressive and ambitious transportation and community goals.

7.2 - Vision Zero Safety Strategy

Vision Zero asserts that any number of deaths is too high a price to pay for the benefits of mobility. Our two collision-free corridors will enhance transportation safety in alignment with our cities' mutual goal of zero traffic-related fatalities, as articulated in Vancouver's Transportation 2040 Plan and Surrey's Vision Zero Safe Mobility Plan (June 2018).

Our corridors will also result in lower greenhouse gas emissions, aligning with Vancouver's Greenest City 2020 Action Plan, an initiative to become the world's greenest city, Vancouver's Healthy City Strategy, and Surrey's Sustainability Charter, a 40-year vision to become a thriving, green, inclusive city.

7.3 - Foundational Digital and Smart City Strategies

Vancouver's Digital Strategy, initiated in 2013 and extending to 2022 and beyond, enhances digital connections among all city stakeholders and advances the city's internal and external digital maturity through projects in connectivity, access to data, and interoperability. These projects increase economic opportunities, improve services, and lay the foundation to transform Vancouver into a smart city.

The pillars of the Digital Strategy are:

- Engagement & access: enabling citizens and businesses to easily interact with the city through digital channels
- Infrastructure & assets: creating a robust digital infrastructure built through strategic investments and partnerships
- Digital economy: making Vancouver a global leader in supporting innovation and the digital ecosystem
- Organizational digital maturity: unifying the city's digital and technology agendas, and preparing our internal agencies for service delivery requiring cross-functional collaboration enabled by data

The first stage of the strategy was foundational, focusing on digital maturity and early business transformation. The second stage, which began in 2017, involves technology transformation that focuses on increasing connectivity and gathering data. The third stage, beginning in 2019, focuses on interoperability, setting the stage for city services and initiatives that are informed by data.



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(Question 7 Con't)

The Smart Surrey Strategy was created to foster sustainable economic development and a high quality of life by leveraging innovation and technological advancements in its decision making, strategies, and investment. Through the Strategy, Surrey has improved services and increased the effectiveness of city resources amid rapid growth and increasing demands.

The Smart Surrey Strategy's four pillars are:

- Social engagement & connectivity: enabling residents to actively participate in decision making
- Service delivery innovation: providing residents with digital services and digital channels to the city government
- Economic growth: supporting the city's innovation ecosystem, knowledge workforce, and economic diversity
- Smart city infrastructure: preparing the city for broadband and smart buildings, transportation, and utility management

The Strategy includes initiatives related to smart transportation, open data, and connectivity to meet the city's increasing transportation demands. A focus on leading technologies that monitor and manage traffic while leveraging and analyzing data from new sources inform the community and city decisions.

These strategies have given our cities deep practical knowledge related to implementing and managing smart city infrastructure and high quantities of real-time data.

[Additional Strategies - Links to files larger than 5 MB.pdf \(320.48kb\)](#)

[City of Vancouver Transportation 2040 Plan as adopted by Council \(reduced\).pdf \(2.75mb\)](#)

[City of Surrey Smart Surrey Strategy March 2015.pdf \(3.84mb\)](#)

[City of Surrey SustainabilityCharter.pdf \(3.16mb\)](#)

[City of Vancouver Digital Journey Update Dec2017.pdf \(3.35mb\)](#)

[City of Vancouver Digital Strategy.pdf \(1.19mb\)](#)

[City of Vancouver Greenest City Action Plan Implementation Update 2017.pdf \(1.99mb\)](#)



Question 8:

Please describe your community's readiness and ability to successfully implement your proposal.

8.1 - Introduction

Surrey and Vancouver have track records of successfully designing and completing complex transportation and smart city projects that require the cooperation of multiple departments and stakeholders. These include:

Surrey's Traffic Management Centre:

Surrey has implemented, expanded, and enhanced its Traffic Management Centre (TMC) as part of the Smart Surrey Strategy. Beyond its regular operations, the TMC has become a living lab for Intelligent Transportation Systems, with rich data being gathered in real time from over 400 traffic cameras, permanent traffic counters, an adaptive traffic signal control system, and the first operating pedestrian thermal sensors in Canada. The development and ongoing operation of the multi-million-dollar TMC requires collaboration between many city departments, including Engineering, IT, Finance, and Legal, and is fully connected with fibre to the provincial TMC.

Vancouver's Olympic Line:

In anticipation of the increased demand that the 2010 Winter Olympics promised for Vancouver's transportation infrastructure, the City built the 1.8-kilometer Olympic Line, which ran two streetcars between Granville Island and the Olympic Village SkyTrain station. The planning, construction, and operation of the line involved project management coordination between the City of Vancouver, Bombardier, and numerous private design consultants, trackwork & power systems companies, and vehicle operations and management contractors. The Olympic Line streetcars successfully moved an average of 9,200 people per day during the 2010 Olympics, and won an American Public Transit Association award and Canadian Urban Transit Association award for Exceptional Performance/Outstanding Achievement.

8.2 - Both Cities are Experienced in Cross-Department Project Management

Surrey's Design & Construction division, which designs and delivers all major infrastructure engineering projects (\$100-150 million per year), regularly partners with Corporate Service's Project Management Office to deliver technology projects, such as the Traffic Management Centre.

Vancouver's Engineering Project Management Office (PMO) works with over 30 engineering branches, comprising nearly 2,000 staff supported by external partners and contractors, to plan and deliver complex infrastructure projects (approximately \$220 million per year). The PMO liaises closely with the City's Technology Services PMO on projects relating to operating technology, cybersecurity, data, connectivity, or citizen services.



8.3 - Existing Smart City Strategies Have Created Horizontal Organizations

Surrey and Vancouver are leaders regarding smart city strategies. Surrey's Smart Surrey strategy earned a nomination for an internationally-recognized Intelligent Community of the Year award, and Vancouver's Digital Strategy was the first of its kind in Canada. These initiatives have led to mature organizations capable of engaging in large-scale smart city project implementations that involve multiple stakeholders and departments.

8.4 - Organizing our Cities to be #SmarterTogether

Our Smart Cities Challenge team has brought two entire cities together, each with their own cultures, processes, and practices. We have integrated our staff and resources in an unprecedented inter-city collaboration that has enabled us to benefit from each's expertise and move quickly in harmony.

We have done this through:

- The Memorandum of Understanding (MoU)

The MoU, signed by Surrey and Vancouver City Managers in December 2017, provides the framework for collaboration that enables us to leverage our diversity and achieve our shared smart city vision. It articulates the collaboration principles, decision-making framework, and roles and responsibilities, laying the foundation for a shared culture. During implementation, the MoU will provide the basis for an ongoing model to manage projects and provide a platform for partnerships between our cities and the broader community.

- #SmarterTogether brand and culture

Our cities have been on a journey together involving rich, ongoing conversations and multiple joint workshops that have led to strong bonds that will extend beyond the Smart City Challenge. Our cities entered the challenge with distinct cultures and coalesced into a harmonious unit – from Mayors to department staff – to develop a common vision and begin taking steps toward its realization.

- A joint governance model

We have developed a joint governance model that encompasses everyone from the Surrey and Vancouver City Managers to individual staff in each city's relevant agencies. This model has guided the development of this proposal, and helped to ensure that initiatives have collective support and address the specific needs of residents in each city.



(Question 8 Con't)

8.5 - UBC-Supercluster Partnership

The University of British Columbia operates like a small city. The university manages its own utilities, construction, roads, buildings, and operations, and has established a 'Campus Living Laboratory' to develop and test new technologies that are fully integrated into campus infrastructure.

UBC has offered to use the campus as a platform to develop and test new infrastructure projects, based on expanded monitoring and data collection, large scale data aggregation, advanced transportation and energy systems design, and the application of artificial intelligence to city management. As a potential partner in our Smart City Challenge, UBC will provide a proving ground for our projects. UBC's leadership and financial commitment related to the Digital Technology Supercluster — to the tune of \$10 million over five years — will create further leverage as the University can align its emerging commercial projects and partnerships with our proposal.

8.6 - SFU Partnership

Simon Fraser University (SFU) has been described as a university where innovative education, cutting-edge research, and community outreach intersect. With campuses in both cities, and global recognition in applied sciences with world renown programs in Mechatronics, Sustainable Engineering, Advanced Data and Analytics, SFU has offered to partner with us on designing, implementing, and advancing our data, analytics, and cyber infrastructure goals.

8.7 - Proactive Measures to Minimize Organizational Risks

- Capacity

Transportation departments in both cities are committed to immense infrastructure projects: the Surrey Light Rail project and the Millennium Line Skytrain extension. Our joint team will oversee the implementation of our collision-free autonomous and connected vehicle corridors and ensure projects have the required balance of city staff, implementation partners, and outside professional support.

- Regulation

Absent a provincial regulatory framework regarding autonomous vehicles, our team will study best practices in public policy and work with provincial policy makers to establish a preliminary framework. If the framework remains undeveloped, we will leverage an existing University of British Columbia autonomous vehicle testing ground as we continue to work with the Province.



Question 9:

Describe your plan for using the \$250,000 grant, should you be selected as a finalist. Provide a high-level breakdown of spending categories and an accompanying rationale.

9.1 - Introduction

The \$250,000 Smart Cities Challenge grant will be allocated primarily to three categories, for which we will also leverage existing resources, infrastructure, and partnerships. The three categories are:

- project management
- community and partner engagement
- knowledge transfer

9.2 - Project Management

We will leverage city office space, support services, and City of Surrey and City of Vancouver staff. The grant will fund:

- A Smart Cities Program Director [\$50,000]

To address internal staffing capacity gaps, we will hire a dedicated full-time Program Director for five months to manage all efforts contributing to the full application.

- Professional services [\$125,000]

We will employ professional services providers to engage our External Advisory Panel, study global autonomous vehicle and smart city corridor best practices, facilitate industry and community workshops, and support the delivery of our final application and supporting multi-media collateral.

9.3 - Community and Partner Engagement

We will leverage a budget for an existing City of Vancouver hackathon and existing support services. The grant will fund:

- Expansion of the safety hackathon [\$10,000]

We will leverage and expand a planned September safety hackathon to invite the community to innovate and co-create mobility-related smart city solutions.

- A 'Design for All' workshop [\$25,000]

We will host a workshop to gather input from the community on how to incorporate their perspectives into our final application. Participants will include individuals from advocacy groups, professional associations, academia, and public sector agencies, among other organizations.



(Question 9 Con't)

9.4 - Knowledge Transfer

The grant will fund:

- A Data Advisory Council [\$20,000]

We will convene remote meetings of mobility analytics researchers from across Canada to create the Canadian Mobility Index, an innovative person-centric transportation metric that accurately reflects the inherent connection between the movement of people and their quality of life.

- Library of Learning [\$20,000]

We will initiate a resource centre to store outputs from our workshops and academic engagements. The library will include a professionally produced video detailing the Surrey-Vancouver concept and proposal, and will be open to the public.



Question 10:

Describe the partners that are or will be involved in your proposal. Where partners are not yet determined, describe the process for selecting them.

10.1 – Introduction

Through the Smart Cities Challenge, Surrey and Vancouver have strengthened existing partnerships and built new ones with organizations interested in improving the quality of life of our residents.

Through our engagement strategy, our partners challenged us to be bold and provided us with feedback that was crucial to shaping this proposal. Many of these partners are prepared to take the next step with us, and contribute in-kind and financial resources to see our plan come to fruition.

10.2 - Partners and Supporters

Letters of support for our proposal and/or commitments to our partnership have been provided by:

- TransLink, Metro Vancouver’s regional transportation authority
- University of British Columbia (UBC)
- Simon Fraser University (SFU)
- Our External Advisory Panel, with letters of support collected from:
 - Deloitte
 - United Way of the Lower Mainland
 - Surrey Schools
 - Fraser Health Authority
 - Port of Vancouver
 - BC Tech Association
 - Greater Vancouver Board of Trade
 - BC Institute of Technology
 - Canada’s Digital Technology Supercluster Consortium
 - Vancouver Airport Authority
- Canadian Urban Transit Research and Innovation Consortium (CUTRIC)
- Insurance Corporation of British Columbia (ICBC)
- Honourable Bruce Ralston, Minister of Jobs, Trade and Technology, Province of British Columbia
- National Association of City Transportation Officials (NACTO)

We have also engaged the neighbouring municipality of Port Moody, B.C., to act as an advisor and provide feedback on the applicability, scalability, and potential adoption of our proposal in a smaller community context.

We will continue to pursue commercial relationships with innovation and industry partners to ensure that we are methodical and thorough in our design process. With over 200 industry proposals, we will take a deliberate approach to selecting the right partners. We anticipate partnerships with software and Internet of Things (IoT) vendors, telecommunications suppliers, and advanced data, sensor, device, and hardware providers. Also included are transportation infrastructure manufacturers, intelligent transportation systems vendors, and many relevant local and global startups.



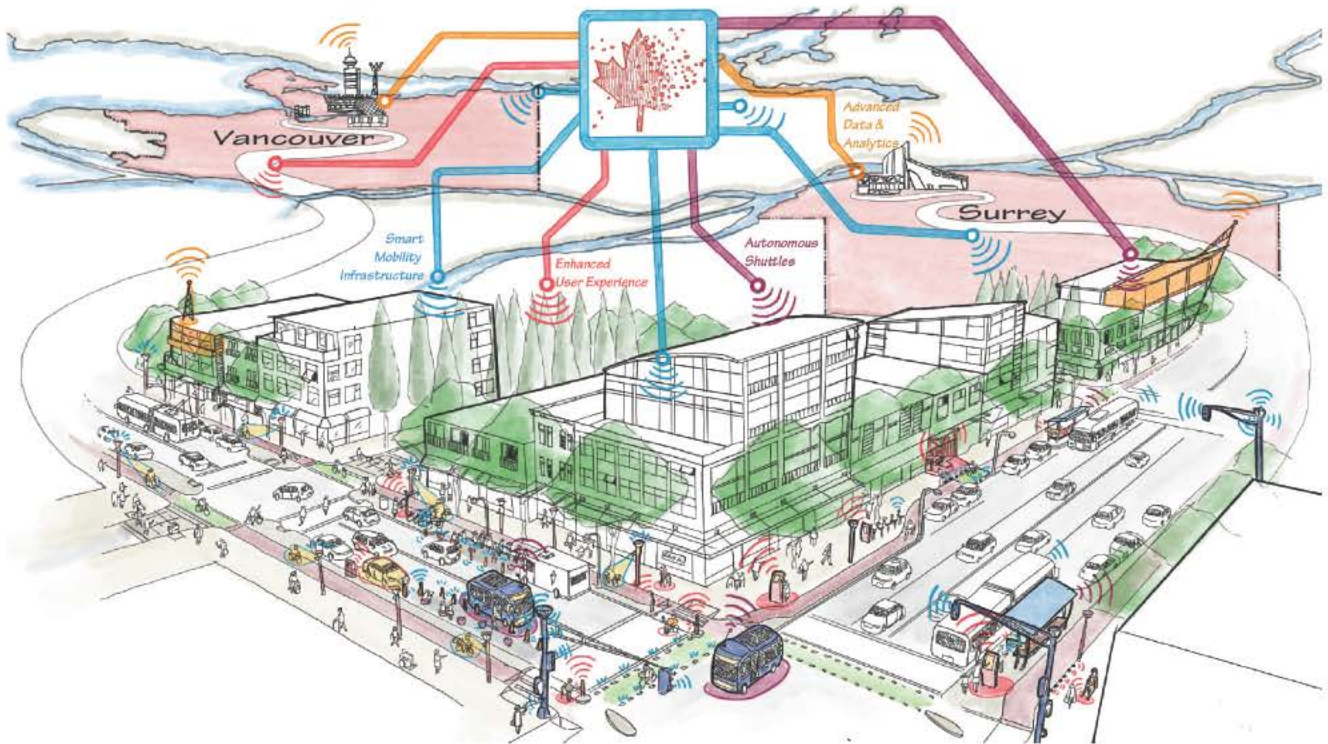
(Question 10 Con't)

It is also our intention to establish a "Design for All" Advisory Community. We will actively engage groups representing our diverse community and a broad range of special interests including seniors, families, persons with disabilities, urban indigenous, new immigrants, LGBTQ, gender equality, and privacy and security to partner with us on the design of the corridors.

10.3 - Bringing on Additional Partners

Surrey and Vancouver's Memorandum of Understanding articulates an inclusive framework to on-board new partners, which we expect to do. Additionally, our Call for Innovation (CFI) allows all potential vendors to be qualified through a structured and transparent process before competitive evaluation.

The Surrey-Vancouver joint working group will continue its collaboration to advance the onboarding of partners as part of a mutually agreed governance framework that has been established as part of our unparalleled two-city collaboration.



SMART
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smart
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challenge

April 20, 2018

The Honourable Amarjeet Sohi, P.C., M.P.
Minister of Infrastructure and Communities
180 Kent Street, Suite 1100
Ottawa, ON K1P 0B6

Via email: infc.sc-vi.infc@canada.ca

Dear Minister Sohi,

Re: The City of Surrey and City of Vancouver's Joint Submission to the Smart Cities Challenge

On behalf of the City of Surrey and the City of Vancouver, we are pleased to present our joint submission to the Smart Cities Challenge.

This application is an unprecedented effort between our respective cities to advance British Columbia's two largest communities to becoming the next generation of smart cities. By working collaboratively we will provide the greatest improvement to quality of life for the largest number of Metro Vancouver residents. We are smarter together.

Throughout the early application process, we engaged our residents in a public dialogue on what they wanted to see put forward for the Smart Cities Challenge. We heard resoundingly that increasing mobility within our region and improving the safety of our transportation systems using smart city technology was the top priority. We are excited about taking this bid to the next level.

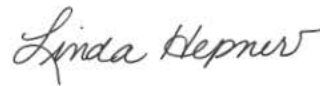
With a \$50 million investment through the Smart Cities Challenge we will not only move people more efficiently, but reduce the number of transportation-related accidents to zero.

We look forward to your review of our submission and eagerly anticipate working with Infrastructure Canada to make it reality.

Sincerely,



Gregor Robertson
MAYOR, CITY OF VANCOUVER



Linda Hepner
MAYOR, CITY OF SURREY

SmarterTogether - Summary Overview

Surrey and Vancouver will implement Canada's first two collision-free multi-modal transportation corridors, taking an ambitious step toward improving our residents' quality of life by removing transportation safety risk, reducing greenhouse gas emissions, and increasing transportation efficiency.

We will provide a model for Canadian cities and will turn Canada into a global autonomous vehicle and smart mobility leader. To achieve this, our two collision-free corridors will be equipped with smart mobility solutions related to:

- autonomous shuttles
- smart mobility infrastructure
- advanced data and analytics, and
- enhanced user experience

The Surrey-Vancouver joint proposal is the result of an extensive, inclusive, and community-first engagement with our residents and an unprecedented collaboration between our two cities. Our journey together has involved rich conversations that have led to strong bonds and a new inter-city culture. We have learned and innovated together to propose a vision that will increase transportation safety, contribute to a greener environment, and build stronger communities.

We have become #SmarterTogether through the Smart Cities Challenge. Our collision-free multi-modal transportation corridors, enabled by smart city technology, represent a bold step in the move from incremental transportation safety improvements to exponential progress.

SmarterTogether - The Corridors

The Surrey corridor will be a 3.4 kilometer route that connects Surrey Memorial Hospital and other key services to a major transit hub.

The Vancouver corridor will be a 2 kilometer route that extends from Granville Island to Science World.

SmarterTogether - Anticipated Outcomes

Well-designed mobility planning, infrastructure, and services are levers that lift our residents' quality of life in multiple ways. In pursuing our primary outcome of achieving zero collisions in our corridors, we will simultaneously achieve other positive mobility-related outcomes. These include: Improved safety; a greener environment; increased availability of mobility options; higher people-moving capacity; increased accessibility; and enhanced travel experiences.

SmarterTogether - Next Steps & Final Proposal

Finalists will develop fully-implementable final proposals that outline all design, planning, and project management components of their plans. Each final proposal must present a strong business case with clearly established milestones and measurable outcomes.

Finalists will also formalize partnerships with organizations that will help them implement their projects, and will establish project governance structures.





Call for Innovation Smart Cities Challenge

Addendum III - Corridor Vision

Issue Date: September 20th, 2018

Issued by: City of Vancouver and City of Surrey (the "Cities")

**PART A
INSTRUCTIONS AND INFORMATION**

1.0 BACKGROUND

- 1.1 This Addendum III is being issued by the City of Vancouver and the City of Surrey (the “Cities”) pursuant to the Smart Cities Challenge Call for Innovation issued by the Cities on February 2, 2018 (the “CFI”). Through this Addendum III, the Cities are interested in selecting an entity (each in this Addendum, a “Proponent”) that submits a proposal (each in this Addendum, a “Proposal”) with the capability and experience to efficiently and cost-effectively meet the requirements described in this Addendum III.
- 1.2 The Cities expects to select a Proponent to enter into contract negotiations. However, the Cities may: (i) decline to select any Proponent; (ii) decline to enter into any agreement; (iii) select multiple Proponents for negotiation; or (iv) enter into one or more agreements respecting the subject matter of Addendum III with one or more Proponents or other entities at any time. The Cities may also terminate Addendum III at any time.

2.0 INSTRUCTIONS

- 2.1 Proponents should submit their proposals on or before 3:00pm on the 15th day of November, 2018 (the “Closing Time”). Proponents must submit proposals through the online submission form at the following link: www.smartertogether.ca/submit and follow the prescribed format.
- 2.2 NOTE: Proponents uploading a PowerPoint or PDF presentation as required under “Step 4 of 4: Details and Components of your submission”, please ensure Proponents PowerPoint or PDF presentation follows the following format:

Maximum # of Slides	Slide Requirement
1 Slide	Title Slide
1 Slide	Tell us about you and/or your partners
1 Slide	Why is this initiative important to you?
1 Slide	How does this initiative align with your goals?
1 Slide	Describe your understanding of our corridor vision?
1 Slide	Describe your understanding of our desired outcomes for the corridor?
1 Slide	High level overview of your overall proposal.
1-3 Slides per project	<p>How many discrete projects in your proposal?</p> <p>For each project, please cover:</p> <ul style="list-style-type: none"> • High level scope • Which of our specific desired outcomes will your project (s) achieve and how? • Timeline • Implementation - High level plan • Funding plan • Resources Required or Pre-requisites • Any dependencies and risks your project may have.

	<ul style="list-style-type: none"> • How would you replicate this across other Canadian Cities? • Lifespan of project and ongoing operating model (if applicable) • Strategy for measurement and monitoring performance
1 Slide	Have any of your projects been implemented elsewhere?
1 Slide	How is your proposal unique and innovative?
1 Slide	Have you collaborated with any other firms that may be also submitting?
1 Slide	Have you collaborated with any other public bodies on innovative projects?
1 Slide	Description of any contributions you are willing to make to take this proposal forward.
1 Slide	How does this proposal benefit your firm(s)?
1-3 slides	Any other guidance you would like to provide.

2.3 Amendments to a Proposal may be submitted via the same methods, at any time prior to the Closing Time. Proposals are revocable and may be withdrawn at any time before or after the Closing Time.

2.4 All enquiries regarding the RFP must be addressed to procurement@smartertogether.ca

2.5 Proposals that are submitted after the Closing Time or that otherwise do not comply in full with the terms hereof may or may not be considered by the Cities and may or may not be returned to the Proponent, in the Cities sole discretion.

3.0 CHANGES TO ADDENDUM III AND FURTHER INFORMATION

3.1 The Cities may amend Addendum III or make additions to it at any time. It is the sole responsibility of Applicants to check regularly for amendments, addenda, and questions and answers in relation to Addendum III.

3.2 An information session (the “**Information Session**”) will be held to enable the Cities to review and clarify the requirements of Addendum III with Proponents, outline the expectations of Proponents proposal and allow Proponents to seek clarification with respect to any aspect of Addendum III in a group forum. The Information Session will be scheduled between September 28th and October 9th and will be located in Vancouver. The specific date, time and location will be posted on www.smartertogether.ca/submit once confirmed.

3.3 Potential Proponents interested in attending the Information Session should email procurement@smartertogether.ca at their earliest convenience.

4.0 EVALUATION OF PROPOSALS

4.1 All Proposals submitted will be evaluated to determine overall best value to the Cities. The Cities expect to evaluate: (i) financial terms; (ii) Proponents’ skills, knowledge, reputations and previous experience(s), including experience(s) with the Cities (if any); and (iii) Proponents’ approach to meeting the Cities requirements.

5.0 CITIES DISCRETION

5.1 For the avoidance of doubt, notwithstanding any other provision in Addendum III, the Cities have in their sole discretion, the unfettered right to: (a) accept any Proposal;

(b) reject any Proposal; (c) reject all Proposals; (d) accept a Proposal which is not the lowest-price proposal; (e) accept a Proposal that deviates from the Requirements or the conditions specified in Addendum III; (f) reject a Proposal even if it is the only Proposal received by the Cities; (g) accept all or any part of a Proposal; (h) split the Requirements between one or more Proponents; and (i) enter into one or more agreements respecting the subject matter of Addendum III with any entity or entities at any time. Without limiting the foregoing, the Cities may reject any Proposal by a Proponent that has a conflict of interest, has engaged in collusion with another Proponent or has otherwise attempted to influence the outcome of Addendum III other than through the submission of its Proposal.

6.0 LEGAL TERMS AND CONDITIONS

6.1 The legal obligations of a Proponent that will arise upon the submission of its Proposal are as set out in the CFI under the heading “Legal Terms and Conditions of CFI”.

PART B CITIES REQUIREMENTS

1. Project proposals for the Smart Cities Challenge

The Cities of Vancouver and Surrey have the opportunity to design the future of smart and safe urban mobility. Our joint Smart Cities Challenge first stage application was chosen out of 130 submissions to be among the 20 finalists vying for federal funding of smart city projects designed to improve the quality of life of city residents. We are among the five finalists vying for funding in the \$50 million category. We are now in the process of composing our final application, which is to be submitted by March 5th, 2019. The preparation of our application provides us with the opportunity to design Vancouver's South False Creek Innovation Corridor and Surrey's University Drive Pilot and Innovation Boulevard Corridor. Together, these innovations have the potential to turn our cities into the global epicenter of smart mobility technology and to establish new global best practices in urban transportation planning.

We are seeking qualified companies to submit smart city technology project proposals that will support the development of the corridors and pilot through the implementation and coordination of smart city technology and data projects. This Addendum III is not intended to prescribe project types or specifications. It is requesting that respondents study our Challenge Statement and conceptual designs, and submit project proposals that will inform our Cities regarding the technology necessary to achieve the outcomes that we have defined.

Responses should include any financial or in-kind contribution that your organization can provide to leverage the Smart Cities Challenge funding, as this will be important evaluation criteria for our final application.

2. Project proposal requirements

All project proposals must include validated technologies, and respondents shall label the proprietary and non-proprietary elements of their technologies.

Proposals should also provide a description of how the solution is:

- replicable;
- interoperable;
- scalable; and
- in alignment with our open data principle.

Replicability is a key principle of the Smart Cities Challenge. Projects must be replicable for other cities that wish to develop their own collision-free multi-modal transportation corridors with autonomous shuttles/vehicles and smart technologies.

Interoperability among devices, sensors, and systems is key to creating functioning zero-collision corridors. Interoperable systems enable all modes of transportation to interact with infrastructure and communicate conditions in the corridors.

Scalability is a requirement since our corridors are intended to serve as pilots for potential wider-scale deployment of smart mobility technology throughout the region and across Canada.

Alignment with our open-by-default principle ensures that corridor data is accessible. This data, available through APIs, will provide opportunities for application developers and innovators to create new products and services that can leverage the technology deployed in the corridors.

Respondents should also become familiar with the implementation phase requirements articulated by Infrastructure Canada. These must be addressed by each city submitting a proposal for the Smart City Challenge. The requirements can be found in section 5.10 of the Smart Cities Challenge Finalist Guide.

We plan to work with industry to further identify and define the technical requirements, essential components, and appropriate architecture for the corridors. This will include communication of current city systems and planned technology related to the corridors.

3. The Challenge Statement

Our application for the first stage of the Smart Cities Challenge included a Challenge Statement, defined as “a single sentence that defines the outcome or outcomes a community aims to achieve by implementing its smart cities proposal.”¹

The Vancouver-Surrey Smart Cities Challenge Statement is:

Surrey and Vancouver will implement Canada’s first two collision-free multi-modal transportation corridors, leveraging autonomous vehicles and smart technologies to demonstrate the path to safer, healthier and more connected communities while reducing emissions, improving transportation efficiency and enhancing livability in the face of rapid growth and traffic congestion. #SmarterTogether

4. Additional priorities

All selected projects will ultimately contribute to reducing the number of collisions in the corridor to zero. In addition to this, we expect projects to contribute to achieving one or more of the following:

- improved safety
- increased availability of mobility options
- reduced emissions
- increased accessibility
- healthier communities
- more socially connected communities
- higher people-moving capacity (improved transportation efficiency)
- enhanced travel experience

¹ <https://impact.canada.ca/en/challenges/smart-cities/applicant-guide>

5. Potential solutions

Our application for the first stage of the Smart Cities Challenge identified four potential project categories. We emphasize that this Addendum III is not prescribing project specifications. Project proposals are not required to fit in the categories identified in our first-stage application. These categories are listed here only for reference.

The four categories included in our first-stage application are:

- autonomous shuttles
- smart mobility infrastructure
- advanced data and analytics
- enhanced user experience

Autonomous shuttles: These projects may include autonomous vehicles, autonomous vehicle electric charging infrastructure, and autonomous vehicle connectivity infrastructure that enables communication between vehicles and sensors embedded in traffic infrastructure.

Smart mobility infrastructure projects: These projects may include sensors (deployed in traffic signals, lighting, and other roadway infrastructure) that generate data that support autonomous shuttle operation and real-time traffic signal adjustments.

Advanced data and analytics projects: These projects may include technologies related to the real-time monitoring, analysis, synthesis, and visualization of data from disparate sources. Insights derived from this data can inform corridor design, signaling, and autonomous shuttle movement.

Enhanced user experience projects: These projects may include technologies that enable wayfinding, smart crossings, shared mobility options, and optimized trip planning that increase the seamlessness of travel while enhancing the safety, accessibility, fairness, and equity of the transportation system.

More detailed explanations of each category can be found under Question 6.3 of the *Vancouver-Surrey Smart Cities Challenge Application*, which is available on the smartertogether.ca website.

6. Guiding principles of our application

All respondents should be mindful of the principles guiding the design of our corridors. The corridors must:

- be scalable, inclusive and open;
- contribute to achieving targets and goals set forth in existing City policies, described in section 8 of this Addendum III;
- respond to the needs of populations that have traditionally not benefitted from technological innovation. These include: financially disadvantaged seniors, people with disabilities, members of vulnerable populations, etc.; and

- respect the context, character, and planning principles of areas adjacent to the corridors.

Respondents should also be familiar with Infrastructure Canada’s Smart City Challenge principles, found in Section 1.2 of the Smart Cities Challenge Finalist Guide.

7. City policy references

Respondents must ensure that their proposed projects align with the goals set forth in relevant city strategies.

7.1 The City of Vancouver strategies

- [Transportation 2040:](#)

Transportation 2040 is a long-term strategic vision for Vancouver that helps to guide transportation, land use, and public investment decisions to develop a smart and efficient transportation system that supports a thriving economy and increases affordability. The plan sets three long-term targets and includes high-level policies and specific actions to achieve this vision by 2040. The targets are:

1. **Zero traffic-related fatalities.** Vancouver’s ultimate safety goal is to eliminate all fatalities and serious injuries from its transportation system.
2. **Increased mode share.** At least two-thirds of all trips will be made by foot, bike, and transit by 2040.
3. **Decreased driven distances.** The average distance per resident will decrease by 20% from 2007 levels by 2020.

- [City of Vancouver Digital Strategy:](#)

The Digital Strategy is designed to enhance digital connections among all city stakeholders and advance the City’s internal and external digital maturity through projects in connectivity, access to data, and interoperability. The Strategy is designed to increase economic opportunities, improve services, and lay the foundation to transform Vancouver into a smart city through projects related to:

1. **Engagement & access:** enabling citizens and businesses to easily interact with the city through digital channels.
2. **Infrastructure & assets:** creating a robust digital infrastructure built through strategic investments and partnerships.
3. **Digital economy:** making Vancouver a global leader in supporting innovation and the digital ecosystem.
4. **Organizational digital maturity:** unifying the city’s digital and technology agendas, and preparing internal agencies for service delivery requiring cross-functional collaboration enabled by data.

The Strategy has three stages. The first stage of the strategy was foundational, focusing on digital maturity and early business transformation. The second stage, currently underway, involves technology transformation and focuses on increasing

connectivity and gathering data. The third stage, beginning in 2019, focuses on interoperability, and sets the stage for city services and initiatives that are informed by data gathered from disparate sources.

- [Congestion Management Strategy:](#)

The Congestion Management Strategy provides direction on identifying and monitoring congestion and developing strategies to address areas impacted by congestion. It includes five priority action areas with dedicated targets. These include:

1. Improving the monitoring of traffic conditions and trends;
2. Improving road safety;
3. Ensuring a smart and efficient transportation system;
4. Coordinating street use;
5. Prioritizing the movement of people and goods.

7.2 The City of Surrey strategies

- [Smart Surrey Strategy:](#)

The Smart Surrey Strategy fosters sustainable economic development and high quality of life by leveraging innovation and technological advancements in decision making, strategies, and investment to improve services and increase the effectiveness of city resources amid rapid growth and increasing demands. The Strategy includes initiatives related to smart transportation, open data, and connectivity to meet the city's increasing transportation demands. The Strategy's four pillars are:

1. **Social engagement & connectivity:** enabling residents to actively participate in decision making.
 2. **Service delivery innovation:** providing residents with digital services and digital channels to the City.
 3. **Economic growth:** supporting the city's innovation ecosystem, knowledge workforce, and economic diversity.
 4. **Smart city infrastructure:** preparing the city for broadband and smart buildings, transportation, and utility management.
- Surrey's Vision Zero Safe Mobility Plan (upcoming)

The City of Surrey is the first municipality in B.C. with a dedicated road safety team. The City's upcoming Vision Zero Safe Mobility Plan will emphasize that collisions are preventable, and that their prevention requires a change in mindset to understand safety as a precondition for mobility. The plan will have four focus areas: pedestrians, cyclists, motorcycles, and intersections. The plan includes the following vision statement: "Surrey has zero people killed and seriously injured on its roads, and human life is valued above all else in the transportation network."

- [Sustainability Charter 2.0](#)

Surrey's Sustainability Charter 2.0 is an ambitious 40-year vision for a thriving, green, and inclusive city. The Charter guides all City decisions and outlines eight themes of sustainability. Key strategic directions that support the Smart Cities Challenge application include:

- Continuing to plan and develop a transportation and mobility network (including active transportation) that supports safety, place making, and integration of neighbourhoods;
- Ensuring all public infrastructure is built and maintained to ensure community safety and well-being for all ages and abilities;
- Addressing traffic safety in a holistic way, particularly around schools and critical accident locations;
- Supporting the development and growth of key sectors including health technology, clean technology, advanced manufacturing, agri-innovation, and the creative economy.

8. The Vancouver South False Creek Innovation Corridor

8.1 Overview

Vancouver's collision-free South False Creek Innovation Corridor will employ information and communication technologies that ensure the safe movement of people using various modes of transportation on three routes in one of the city's busiest and most scenic areas. Autonomous shuttles will be a central feature in the collection of smart mobility technologies that make up the corridor. These will serve as a pilot for wider-scale deployment of the technology throughout the region as a 'first-mile/last-mile' transit-supporting solution, and accelerate our transportation system's advance toward electrification and enhanced safety.

The City of Vancouver has identified specific mobility challenges in the proposed corridor that can be addressed through smart mobility technologies. Respondents are welcome to address these in their proposals. However, it is important to note that project proposals can include solutions that address common challenges beyond those identified in this Addendum III.

8.2 Location & notable features

The three-kilometer South False Creek Innovation Corridor will be located south of False Creek, extending between popular tourist destinations Granville Island and Science World, and connecting with the False Creek South and Olympic Village communities.

Three routes will comprise the corridor. These are:

1. West 4th, West 6th, and West 2nd Avenues
[multi-lane vehicle and transit arterials]
2. The Seaside Bypass
[a local street comprised of Lamey's Mill Road, Charleson Park, Moberly Road, Commodore Road, and West 1st Avenue]
3. The Seaside Greenway/Seawall between Granville Island and Science World

[a waterfront walking and cycling path]

The location is adjacent to an emerging technology innovation hub and includes three major commercial districts [Granville Street, Cambie Street, and Olympic Village], popular destinations for tourists and residents, and a major health precinct and hospital site. Major annual events occur in this area, including the Sun Run and Dragon Boat Festival.

Graphic 1.1. Existing Systems and Destinations in Appendix 1 illustrates the existing transportation infrastructure within and adjacent to the corridor. *Graphic 1.2. Concept Plan* in Appendix 1 illustrates the new smart mobility routes.

8.3 Existing challenges

Significant opportunities exist in the corridor to improve safety and enhance the experience of moving through the area. *Graphic 1.3. Opportunities and Challenges* in Appendix 1 illustrates some of the challenges that currently contribute to collisions in the proposed corridor.

West 4th, West 6th, and West 2nd Avenues

This arterial route provides connections to Granville Street, Cambie Street, and Main Street north-south arterials. The only cycling infrastructure along the route is in a small area around Olympic Village SkyTrain Station. The experience for pedestrians varies considerably along the route. In some segments, particularly those adjacent to new developments, the sidewalk is wide and a boulevard provides a buffer from the street. In other segments, sidewalks are narrow. A long segment of West 6th Avenue between Alder Crossing and Moberly Road lacks a north sidewalk. Due to the volume and average speed of vehicles travelling on arterials, safety at crosswalks and bike crossings is a key concern.

The Seaside Bypass route (Lamey's Mill Road, Charleson Park, Moberly Road, Commodore Road, and West 1st Avenue)

This local street provides connections to the False Creek South and Olympic Village neighbourhoods, and provides a faster and more direct cycling alternative to the Seawall. Cycling infrastructure exists primarily in the form of a traffic-calmed shared roadway with signs and painted markings, including painted bike lanes between the parking lane and travel lane on the West 1st Avenue segment. Safety in these bike lanes is a concern as there is a risk of 'dooring' and a need for cyclists to move into the traffic lane to maneuver around illegally stopped vehicles.

The walking experience on this route varies considerably. Many segments of the route are missing sidewalks on one side (segments of Lamey's Mill Road, Moberly Road, and Commodore Road) or both sides (Charleson Park). Many segments have narrow sidewalks which are further constrained by posts, transit shelters, and driveway curb cuts. Inconsistent lighting is also a problem.

Some intersections on the route are irregular and can be challenging to navigate for all modes. There are also some weak connections to key locations, including inadequate access to Olympic Village Station and an unclear cycling connection to Cambie Street.

Seaside Greenway/The Seawall

Vancouver's Seaside Greenway (The Seawall) is a safe 28-kilometer walking and cycling route connecting the Vancouver Convention Centre to Spanish Banks Park. The Seawall connects key waterfront destinations. Recent upgrades and separated paths have improved safety, but conflicts between pedestrians and cyclists remain a concern at busy multi-modal nodes, crossing, and connections to other routes.

8.4 Prioritized strategies

The City of Vancouver has identified some strategies that can contribute to achieving our desired outcomes. *Graphic 1.4. Prioritized Strategies* in Appendix 1 illustrates these strategies and appropriate locations for their execution.

9. The Surrey University Drive Pilot and Innovation Boulevard Corridor

9.1 Overview

Surrey City Centre is undergoing a bold transformation from a suburban town centre to a walkable, high density, and transit-oriented downtown. The improved safety resulting from a smart mobility transportation network – catalyzed by the Smart Cities Challenge – will accelerate this transformation and serve as a model that can be replicated across Canada and the world.

The City of Surrey is implementing its collision-free corridor in two stages:

Stage 1: The one-year University Drive Pilot will test technologies, build public acceptance before full implementation, and deploy automated shuttles in exclusive rights-of-way to allow time for changes in legislation that will permit on-road deployment of automated vehicles.

Stage 2: The Innovation Boulevard Corridor will follow the University Drive Pilot and feature full deployment of smart city technology, infrastructure, and strategies, incorporating the learnings from the Pilot.

Roadway infrastructure, energy distribution, and fibre optic networks are being significantly upgraded to transform these areas from their current focus on single family residential use to a new focus on high density, high technology, and high efficiency. These areas will be further transformed in the next five years with the addition of new light rail transit lines.

The evolving suburban context gives technology providers the opportunity to demonstrate how smart mobility technology can be built into a city's developing infrastructure instead of overlaid upon an existing urban inner-city. The two-stage approach provides the opportunity for respondents to demonstrate the replicability and scalability of their proposed projects.

The City of Surrey has identified specific mobility challenges in the proposed pilot and corridor areas that can be addressed through smart mobility technologies. Respondents are

welcome to consider these. However, respondents may submit proposals with solutions that address common challenges beyond those identified in this Addendum III.

Graphic 2.1. University Drive + Innovation Boulevard: Key Plan / Corridor Context for Surrey in Appendix 2 illustrates the University Drive Pilot and Innovation Boulevard Corridor areas.

9.2 University Drive

9.2.1 Location and notable features

The University Drive Pilot area will include a 1.2-kilometer off-road autonomous vehicle demonstration route in the heart of Surrey City Centre, linking Surrey Central SkyTrain Station with Gateway SkyTrain Station.² This area is embedded in one of the region's largest infill areas, involving the transformation of a collection of strip-oriented retail stores and single detached homes into an area of high-density residential towers and a concentration of educational centres and supporting services. Significant development is scheduled to occur adjacent to this area over the next five years.

University Drive's south terminus is anchored by Simon Fraser University's Surrey campus and a new Sustainable Energy Environmental Engineering Centre, as well as Kwantlen Polytechnic University's new campus in Civic Plaza. In addition to post-secondary institutions, the route also includes several important regional destinations including:

- Central City Mall, the Fraser Health Authority headquarters, and a 560,000 square foot commercial office complex;
- City Hall, City Centre Library, and Civic Plaza;
- A regional multi-modal transportation hub that includes Surrey Central SkyTrain Station, car-share sites, a dedicated Fraser Health employee shuttle, the region's second busiest bus exchange, and areas with high pedestrian volume.

Graphic 2.2. University Drive: Autonomous Vehicles - Pilot in Appendix 2 illustrates the University Drive Pilot area.

9.2.2 Pilot objectives

The University Drive Pilot has the following target outcomes:

- Capitalize on opportunities to pilot enhanced safety technologies;
- Familiarize City operations with autonomous vehicle technology;
- Engage the community, seek stakeholder feedback, and address concerns;
- Pilot Community Employee Benefit (CEB) partnerships;
- Deploy baseline measurement technology;
- Resolve autonomous vehicle interaction with general traffic;
- Co-ordinate schedules of autonomous vehicle deployment with multiple capital works and roadway projects;
- Adapt Health District deployment plans based on operational experience;

² The University Drive Pilot location replaces the UBC test bed referenced in our application for phase one of the Smart Cities Challenge

9.3 Innovation Boulevard

9.3.1 Locations and notable features

The Innovation Boulevard corridor is also the focus of intense redevelopment, as it is transforming from a mid-century residential area with single detached homes to a high density health technologies innovation precinct.³ There is significant development scheduled for this area in the next five years.

Surrey's Innovation Boulevard Corridor will be developed along a 4.5-kilometer route comprised of a mix of local and collector streets along with high volume arterials. Important features along the Innovation Boulevard Corridor route include:

- Surrey Memorial Hospital, the second largest hospital in B.C. and site of the province's busiest emergency department;
- Jim Pattison Outpatient Surgery Centre, a \$237 million facility that includes over 50 clinics and services;
- 10 additional Fraser Health Authority facilities;
- RCMP E-division, the headquarters of the RCMP in British Columbia.

Graphic 2.3. Innovation Boulevard: Technology and Infrastructure Strategies in Appendix 2 illustrates the Innovation Boulevard Corridor area.

9.3.2 Corridor objectives

Smart mobility technology in the corridor will achieve a number of outcomes in addition to eliminating collisions. For instance, autonomous shuttles will:

- provide critical first and last-mile transportation between King George SkyTrain Station and prominent employment and health care centres; and
- provide connectivity between Innovation Boulevard, a major health and technology cluster, and E-Division, the RCMP head office.

The Innovation Boulevard Corridor has the following target outcomes:

- improved safety
- increased availability of mobility options
- reduced emissions
- increased accessibility
- healthier communities
- more socially connected communities
- higher people-moving capacity (improved transportation efficiency)
- enhanced travel experience

³ For more information, visit <https://www.innovationboulevard.ca/>

9.4 Important challenges in the University Drive Pilot and Innovation Boulevard Corridor

General challenges related to the University Drive Pilot and Innovation Boulevard Corridor include:

Safety

- Addressing vehicular-autonomous vehicle/shuttle conflicts through smart city technologies that work in conjunction with promising collision mitigation practices including extensive use of signage, graphics, and public engagement processes.
- Addressing vehicular-autonomous vehicle/shuttle conflicts through smart city technologies that work in conjunction with emergency vehicle response protocols and practices.

Sustainability

- Reducing greenhouse gases and increasing the use of sustainable transportation modes.
- Incentivizing modal shift and new transit customers through citizen use of the TransLink mobile app and by leveraging mobility app data.

Mobility and Accessibility Options

- Ensuring all people (regardless of age, demographics, income levels, etc.) have the same opportunity to access sustainable transportation options.
- Providing persons with limited mobility with excellent access to transit to meet their daily needs and participate in civic life.
- Developing interactive technology at the street level to provide an on-demand shuttle call for individuals with reduced mobility.

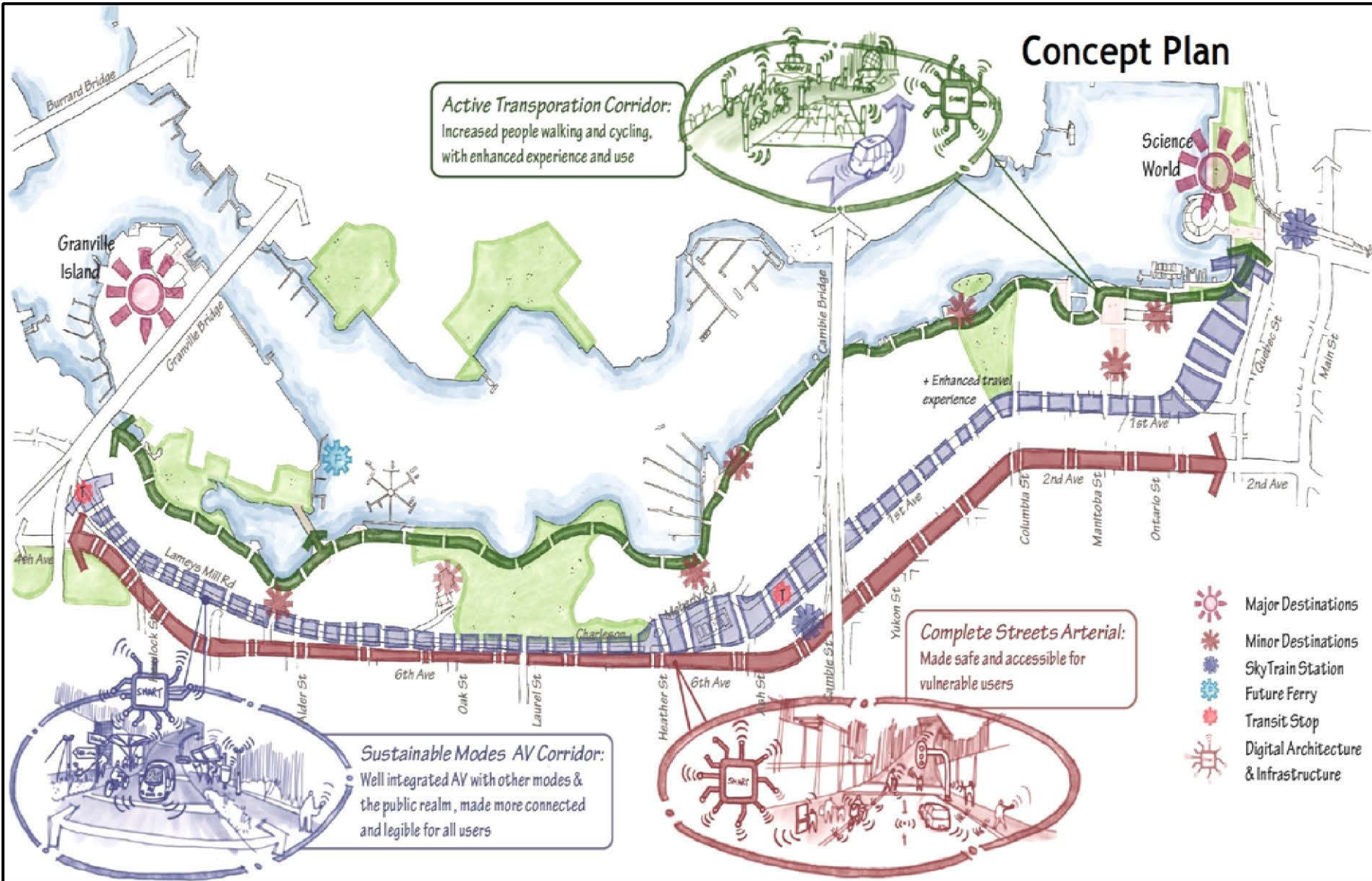
For a list of specific challenges in the University Drive Pilot and Innovation Boulevard Corridor, see *Graphic 2.4. University Drive: Detailed Enhancement Plan* and *Graphic 2.5. Innovation Boulevard: Detailed Enhancement Plan* in Appendix 2.

9.5 Potential solutions

Respondents can study the four project categories identified in Section 6 of this Addendum III to explore potential solutions. Please note that the project categories are for reference, and that project proposals can include technology that does not fall into these categories.

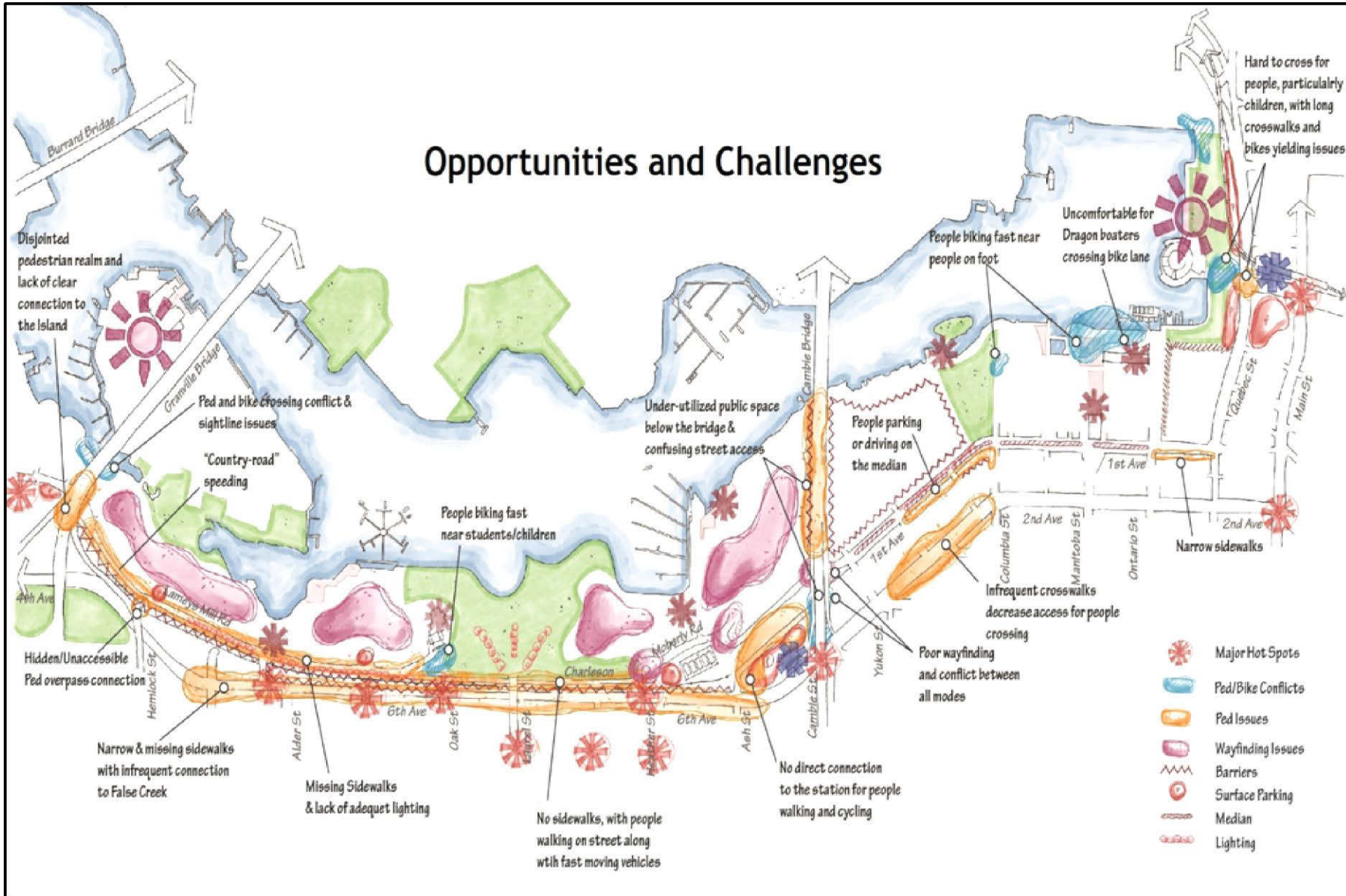
Graphic 1.1: Existing Systems and Destinations





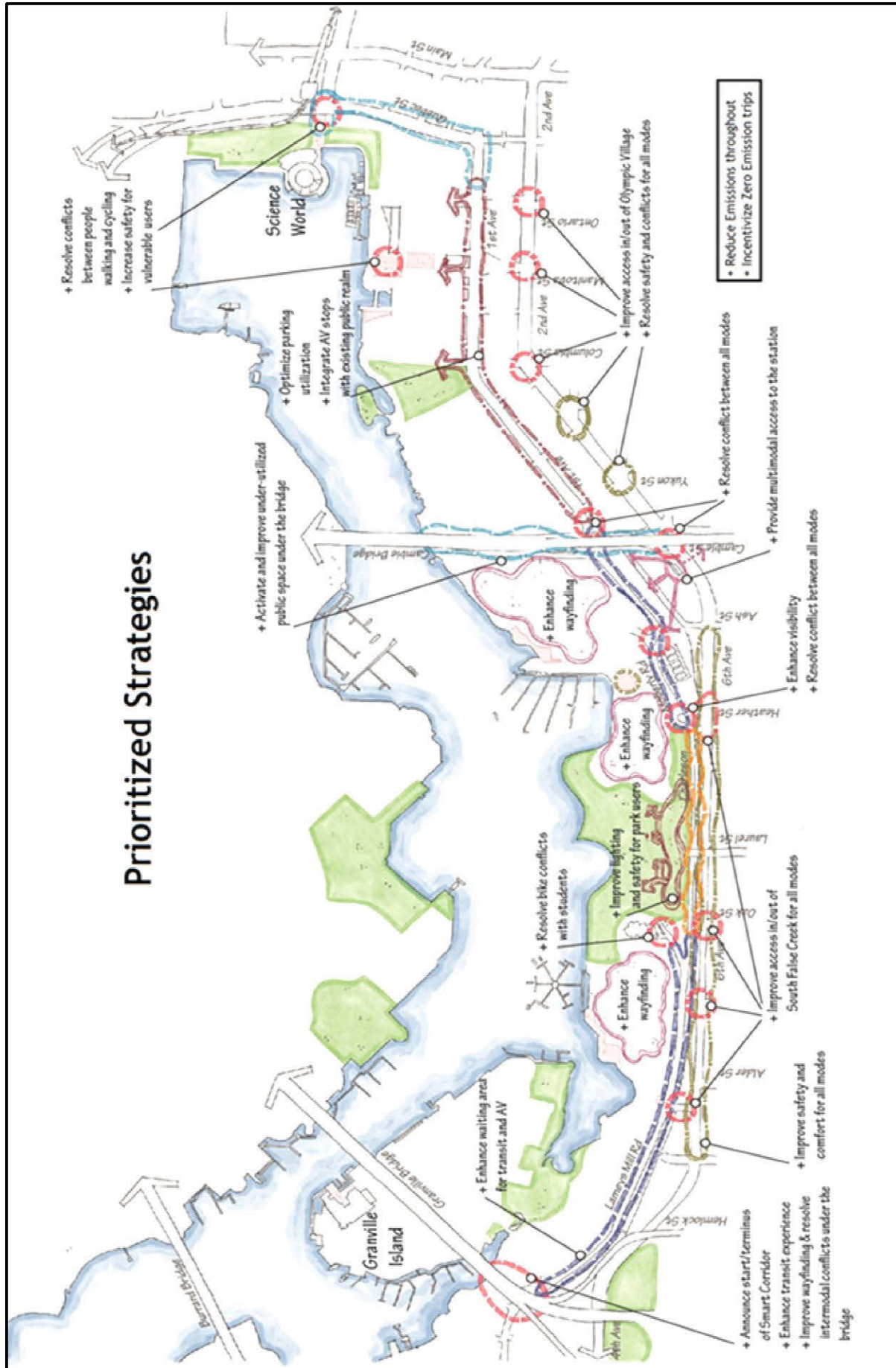
Graphic 1.2: Concept Plan

Opportunities and Challenges



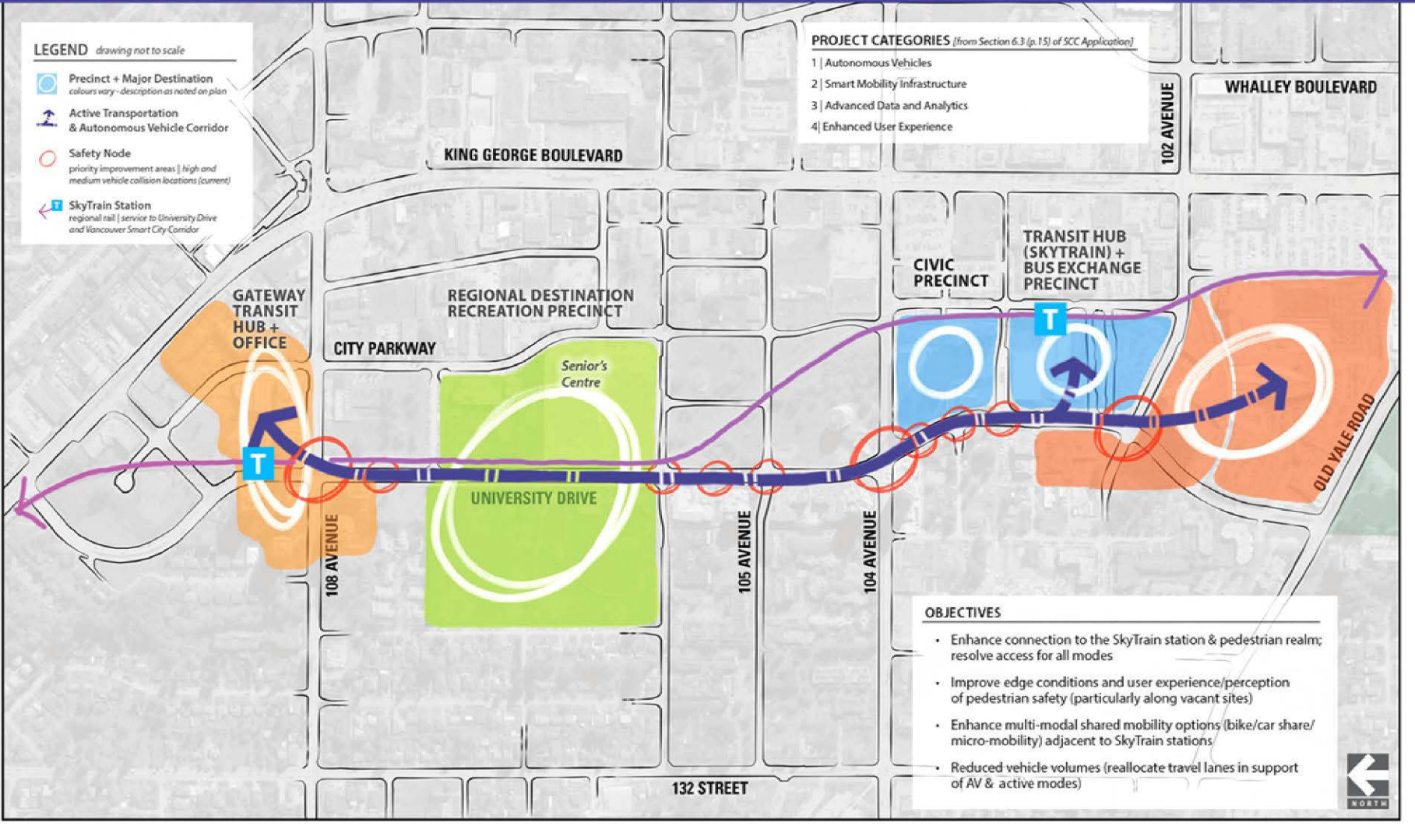
Graphic 1.3: Opportunities and Challenges

Graphic 1.4: Prioritized Strategies



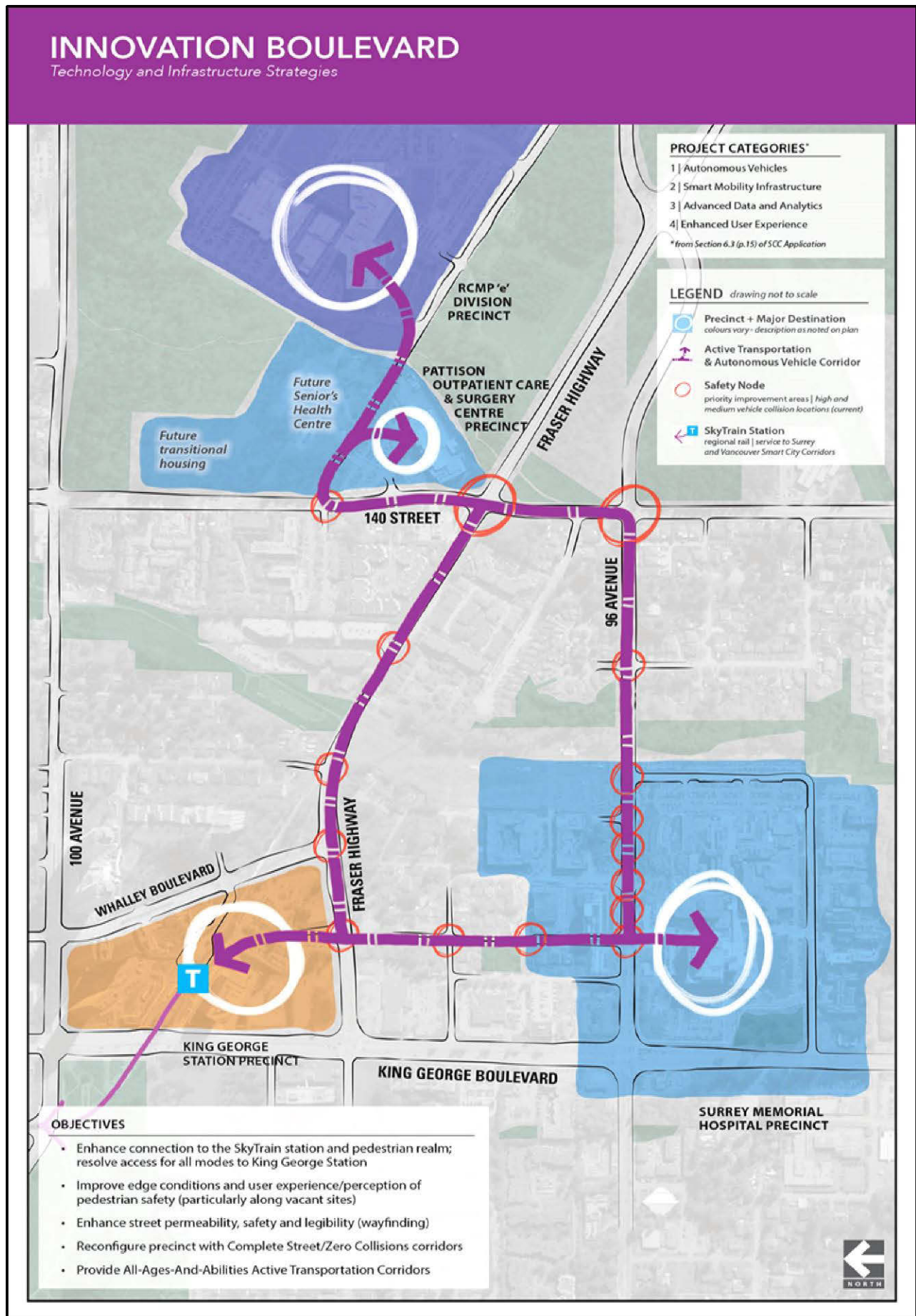
UNIVERSITY DRIVE

Autonomous Vehicles - Pilot



Graphic 2.2. University Drive: Autonomous Vehicles - Pilot

Graphic 2.3. Innovation Boulevard: Technology and Infrastructure Strategies

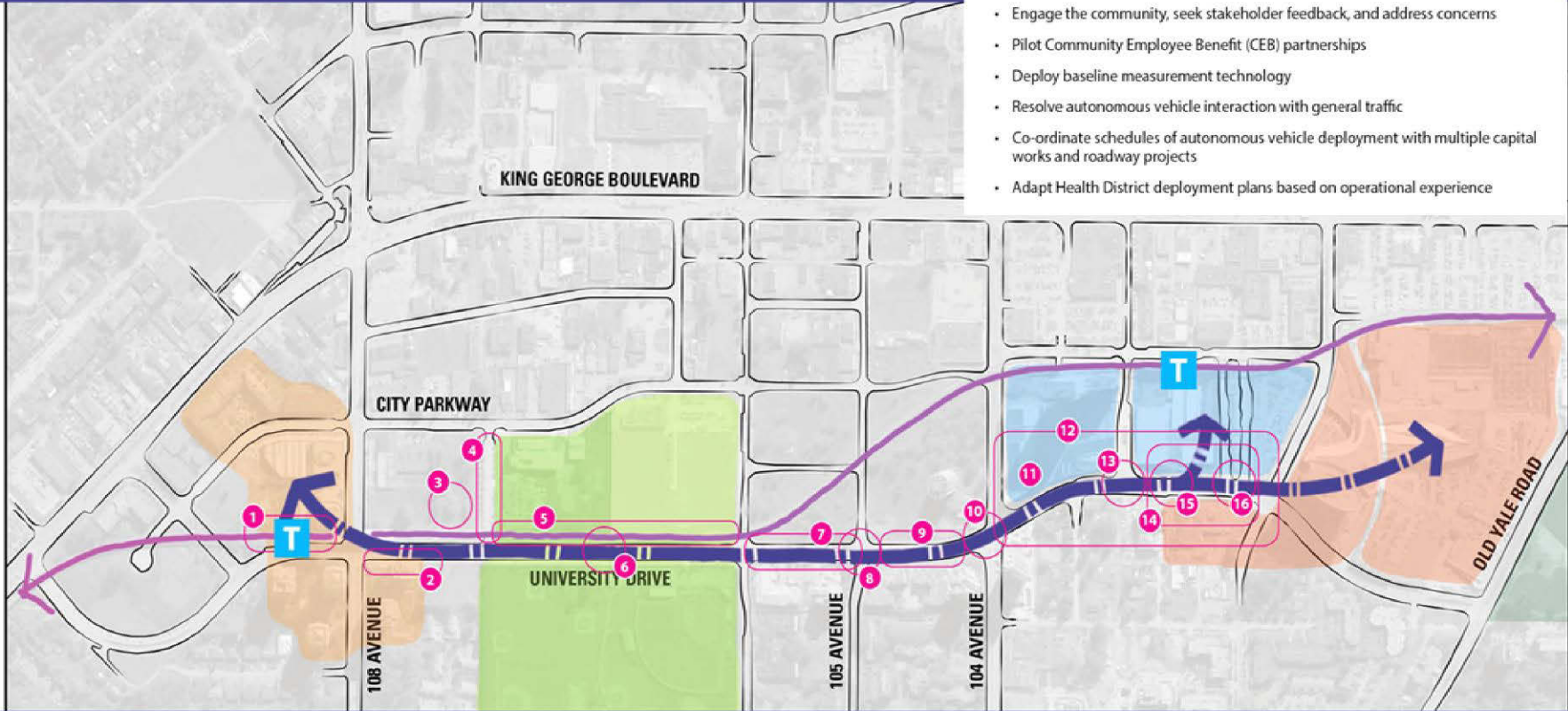


UNIVERSITY DRIVE

detailed enhancement plan

TARGET OUTCOMES

- Capitalize on opportunities to pilot enhanced safety technologies
- Familiarize City operations with autonomous vehicle technology
- Engage the community, seek stakeholder feedback, and address concerns
- Pilot Community Employee Benefit (CEB) partnerships
- Deploy baseline measurement technology
- Resolve autonomous vehicle interaction with general traffic
- Co-ordinate schedules of autonomous vehicle deployment with multiple capital works and roadway projects
- Adapt Health District deployment plans based on operational experience



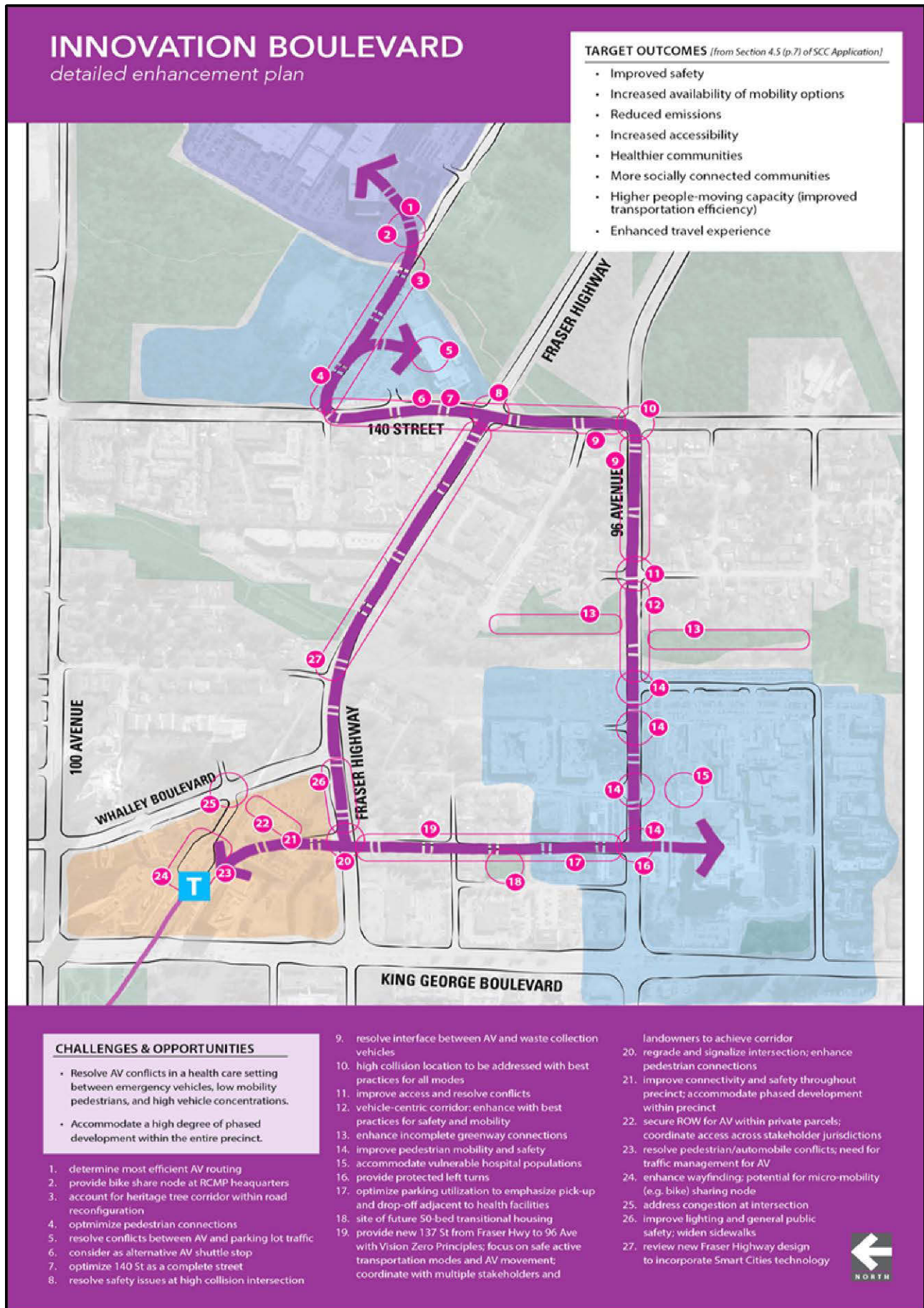
CONTEXT & CHALLENGES

A linear corridor with a diversity of demographics and land use types, including seniors' centres, veterans' housing, transitional housing, high-density upper market residential, regional transit hubs, and a significant concentration of learning centres, including SFU Surrey's main campus and new SFU Sustainable Energy & Environmental Engineering building. Challenges include the high degree of development within the corridor with rapid densification and roadworks occurring adjacent to the project corridor.

1. reallocate Translink parking for shuttle terminus and staging area
2. optimize parking utilization
3. site of existing transitional housing
4. provide segregation for AV from University Dr. to Seniors' Centre & maintain vehicle access from City Parkway
5. potential off-road path for AV
6. improve pedestrian crossing for vulnerable users
7. improve interface between cyclists and AV
8. resolve access issues for residents and vehicles travelling on 105 Ave
9. improve wayfinding
10. enhance interface between AV and other road users and new construction
11. potential charging site on plaza
12. potential enhancement of University Dr from 102-104 Ave as AV, pedestrian and cyclist-only route
13. improve safety for all modes
14. integrate with phasing of other capital projects including LRT, ice rink and bus loop; resolve routing options for terminus location including rededication of recreation centre landscaped space; reconcile AV route with existing bus lines
15. enhance and expand underutilized pedestrian and cyclist realm
16. resolve conflicts with bus loop, parking lot and intersection



Graphic 2.5. Innovation Boulevard: Detailed Enhancement Plan



INNOVATION BOULEVARD

detailed enhancement plan

TARGET OUTCOMES (from Section 4.5 (p.7) of SCC Application)

- Improved safety
- Increased availability of mobility options
- Reduced emissions
- Increased accessibility
- Healthier communities
- More socially connected communities
- Higher people-moving capacity (improved transportation efficiency)
- Enhanced travel experience

CHALLENGES & OPPORTUNITIES

- Resolve AV conflicts in a health care setting between emergency vehicles, low mobility pedestrians, and high vehicle concentrations.
- Accommodate a high degree of phased development within the entire precinct.

1. determine most efficient AV routing
2. provide bike share node at RCMP headquarters
3. account for heritage tree corridor within road reconfiguration
4. optimize pedestrian connections
5. resolve conflicts between AV and parking lot traffic
6. consider as alternative AV shuttle stop
7. optimize 140 St as a complete street
8. resolve safety issues at high collision intersection

9. resolve interface between AV and waste collection vehicles
10. high collision location to be addressed with best practices for all modes
11. improve access and resolve conflicts
12. vehicle-centric corridor: enhance with best practices for safety and mobility
13. enhance incomplete greenway connections
14. improve pedestrian mobility and safety
15. accommodate vulnerable hospital populations
16. provide protected left turns
17. optimize parking utilization to emphasize pick-up and drop-off adjacent to health facilities
18. site of future 50-bed transitional housing
19. provide new 137 St from Fraser Hwy to 96 Ave with Vision Zero Principles; focus on safe active transportation modes and AV movement; coordinate with multiple stakeholders and

20. regrade and signalize intersection; enhance pedestrian connections
21. improve connectivity and safety throughout precinct; accommodate phased development within precinct
22. secure ROW for AV within private parcels; coordinate access across stakeholder jurisdictions
23. resolve pedestrian/automobile conflicts; need for traffic management for AV
24. enhance wayfinding: potential for micro-mobility (e.g. bike) sharing node
25. address congestion at intersection
26. improve lighting and general public safety; widen sidewalks
27. review new Fraser Highway design to incorporate Smart Cities technology

