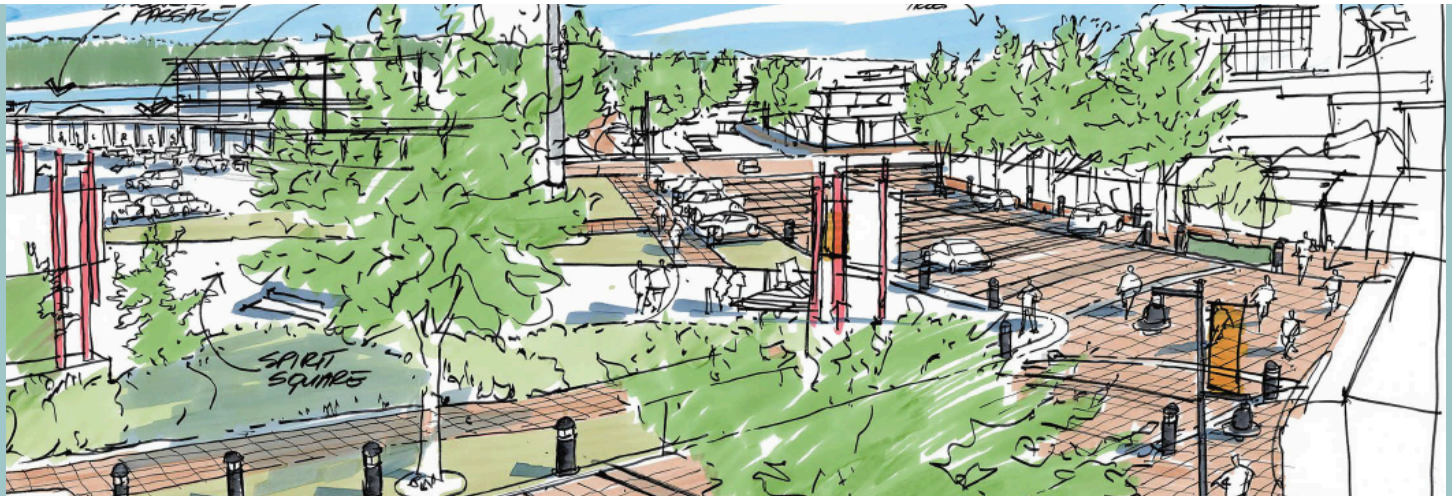

SMART CITIES CHALLENGE

CITY OF CAMPBELL RIVER

City of Campbell River

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CHALLENGE STATEMENT

We will transform our downtown, collaborating with our partners and using enabling technologies, open data, and smart applications to solve safety issues and care for the needs of our vulnerable population, creating a welcoming city centre that attracts more businesses and visitors.

OUTCOMES OF PROPOSAL

Using our downtown core as a living lab, we will implement solutions to address the challenges facing our vulnerable residents in Campbell River. This vulnerable population includes those who are homeless, addicted to substances, disabled, and low income. They lack access to the basic necessities of life: shelter, food, safety, and employment.

Why Downtown?

Downtown is the heart of Campbell River. Occupying one of the most beautiful natural settings BC has to offer, downtown is where people gravitate for events, celebration, food and drink, work, government services, recreation and shopping. Ensuring Campbell River's downtown is safe, vibrant, and thriving for current and future generations is paramount.

While economic development fuels our downtown's vibrancy, a healthy and safe city centre supports it. We are mindful of the significant challenges we face not only from climate change and sea level rise, but from social issues such as homelessness and addiction.

The City's *Official Community Plan, Refresh Downtown* document and 2018 Smart Cities engagement with its citizens reveals that people want the City to focus on making Campbell River's downtown a safe, welcoming neighbourhood that embraces vibrant cultural and economic development.

Critical to the success of our smart cities goals is solid infrastructure. The smart technologies and applications we are proposing rely on enterprise level internet. The City of Campbell has already implemented this infrastructure with its municipal broadband network. Launched in 2017, CRadvantage provides businesses and the public with access to inexpensive, high speed, broadband fibre optic networking in Campbell River.

Building on this strong foundation, the City of Campbell River is ready to implement smart strategies to reinvent its downtown.

Background

Every night, 79 people in Campbell River go to sleep without a home. Many of these people are affected by mental health and addiction challenges, impeding their ability to secure housing. In the first 6 months of 2017, Campbell River experienced overdose deaths at a rate of 62 per 100,000 – double the average rate on Vancouver Island.

It can be a vicious circle. Often, people unable to access mental health services self-medicate by using illegal drugs. Their addiction and mental issues impact their ability to maintain employment, destabilizing their ability to either secure or keep housing. People with mental health and addiction problems and people without housing are extremely vulnerable.

Mental health, addiction and homelessness is a difficult cycle to break. People under this enormous pressure are often using drugs in open areas or public washrooms downtown, adding to an increase in vagrancy, fighting and other crimes. This increase in crime has resulted in a reluctance for businesses to invest in the area and for people to feel safe when they are visiting downtown.

This problem is not unique to Campbell River. Recognizing the need for a solution, the City is being proactive, working to develop a foundation for change. If Campbell River is able to find solutions that help our vulnerable citizens and revitalize our downtown, the model will be applicable to other communities across Canada.

Why address the challenges of our vulnerable population in the downtown? First and foremost, because they are a part of the community, and when one part of the community struggles, the whole community struggles. Beyond that, providing the support and means for vulnerable people to access housing and social services will translate into fewer police incidents, less crime, and, eventually, more people participating in the local economy. This benefits not only our vulnerable citizens, but the local businesses, residents and visitors who use downtown.

Ultimately, this will transform downtown Campbell River into a vibrant, safe, and welcoming place for everyone. Currently, residents and business owners have expressed that they do not feel safe. This is putting Campbell River's downtown at risk of not only losing potential business, but losing current businesses and people who have invested there. We need to make a change.

Goals Supporting Challenge Statement

ONE | Reduce homelessness in Campbell River by 100% by 2025.

As of the last count, Campbell River is home to 79 homeless people. Our goal is to get that number as close to zero as possible, recognizing that some people have complex histories and are entrenched in homelessness, unable to envision a life beyond the streets.

Homelessness is currently concentrated in Campbell River's downtown. This is where people can access public washrooms and local amenities, it's close to many support service clinics, and it's easily accessible by public transportation. Downtown Campbell River is the heart of our community and the heart of our homeless population's challenges.

Recently, the issue has been escalating with increasing incidents of fighting, vandalism, public drunkenness, and overdoses in our downtown neighbourhoods. Most recently, residents and downtown businesses expressed their concerns around safety. All of this culminated in the Chamber of Commerce circulating a petition for increased security in the downtown.

Throughout our community engagement for the Smart Cities Challenge, we saw a common theme in idea submissions and commentary from residents. Many ideas touched on the needs of our vulnerable population and addressing their challenges downtown, while others provided solutions that would enhance quality of life and increase safety. These were documented at www.connect.campbellriver.ca.

Utilize the city's new high-speed broadband network to provide virtual care options… Virtual Health Care allows for the use of kiosks and portals, remote consultations, and access to electronic personal health records. Virtual Health Care provides enhanced accessibility for our disabled and vulnerable sector…"

"Free public WiFi for the whole city. This would be a huge thing. Cities in Europe are starting to do this and I think it would be a 10 year jump if we did it now... "

"Electronic web linked kiosks. Add electronic web linked kiosks throughout the City that provide up to date information on what to do in the City..."

To address the needs of our vulnerable residents, we will use smart applications, technology, and connected data to create a feedback loop, this will ensure those who work with the homeless and those who are homeless, have the information to support their efforts to find shelter. We will host a community hackathon, encouraging local technology developers to create a mobile app (or other solution) through which available beds, food, employment opportunities, health alerts, and other services can be shared. Users would also be able to communicate their challenges and provide status updates, in terms of security, housing, employment, health, and more.

This same information would be made available through public kiosks which would be strategically located throughout the downtown for everyone to use. Providing a public mesh will ensure those with cell phones and those using the kiosks can access the information. Both the mobile phone app and kiosk will accept information in addition to sharing it, creating data collection points. This open data will then be available to those in the feedback loop to highlight trends, reduce information gaps, and identify needs and opportunities in the system.

The smart city approach is critical to our goal to end homelessness in Campbell River. Using technology, we can ensure connections are made throughout the support network as well as with the homeless and those at risk of becoming homeless. Using the open data mined from these applications, we can share trends and enable access to information for further analysis to support new and ongoing initiatives in the system.

To measure our progress, we will complete an annual homeless count, collaborating with service agencies. Whether the number of homeless individuals is decreasing, staying the same, or increasing will determine our success and our strategy going forward. In addition to this, key progress indicators will include the number incidents requiring police presence in the downtown, overdose rates, and the results of annual services. Additional metrics may be identified as we move forward.

Ultimately, when the homeless count reaches and remains near zero, we will be successful.

TWO | Reduce the number of incidents requiring police presence by 75% by 2025, creating a safe, welcoming city centre for all to enjoy.

Safety in the downtown is a concern for locals, visitors and businesses in Campbell River. It is critical for us to address this issue not only because we want to attract new businesses, but because we don't want to lose any existing businesses that are frustrated by crime in the downtown.

As we engaged with the public to prepare for this application, the topic of safety came up again and again. The Chamber of Commerce recently initiated a survey to take the pulse of its members on the issue, stating the following:

"Over the past few months our Chamber member's concerns around safety and vagrancy in the downtown core have escalated. In response to these concerns, we have prepared a survey for our members, particularly those in the downtown core, to respond to. This will help us ensure that any response we take on this issue is fact based. We are working in collaboration with organizations like the Downtown BIA, City and RCMP to better understand the facts and potential solutions to address these concerns. Thank you for taking the time to respond to these questions."

The City also received direct correspondence from concerned citizens with statements such as:

"I've lived in this town my entire life [and] I've been watching it get worse & worse. It's heart breaking to see how bad it has become…"

"The residents of Campbell River are afraid to take their children downtown."

While safety concerns are closely-tied with the challenges we face from our vulnerable population downtown, which we discussed under Goal #1, additional measures will be taken to specifically address the safety component. This will benefit local businesses and visitors, but it will also benefit residents – a portion of whom are the vulnerable people spending time or living on our streets downtown and who also want to be secure.

One way to support a safe and welcoming downtown is to reduce vehicle traffic and increase the number of pedestrians and cyclists. This cuts down on environmental pollution as well as noise pollution. Proposed solutions include implementing an e-bike rental system, a car sharing program, smart crossings and parking sensors. Downtown parking is limited during peak times and seasons. We want people in the downtown, but need to overcome the perceived parking limitations.

We will install parking sensors in the road and link them with smart applications for users to identify available spots, thereby reducing traffic from those seeking parking. These sensors will provide data on stall usage, which can be translated into our current GIS system and combined with a map of hot spots for vehicle break-ins to help pinpoint vehicles at risk for crime. The parking sensors will also enable an automated parking ticket system.

As an example of community interest in addressing safety issues related to traffic, one idea submitted to connect.campbellriver.ca outlined using smart crossings to support safer streets for cyclists, pedestrians, and cars.

"Smart crossings have LED lights under the road. The surface directs pedestrian movement. It can differentiate between people, cars and bikes. It updates road markings without manual control..."

Using smart crossings will increase mobility for everyone in downtown Campbell River. By making bike paths and crosswalks safer and reducing accidents, it will increase cyclist and foot traffic in our city centre. This will reduce vehicle traffic, making the area more welcoming and pedestrian-friendly.

To create a safe downtown, we will use a variety of technologies and apps. We will install smart street lighting to improve visibility and security. These innovative lights will be remotely controlled to enable dimming, brightening, and even flashing. They will also include speakers, through which emergency messages could be broadcast. This would be particularly pertinent as Campbell River's downtown is in a flood zone, susceptible to both sea level rise and potentially catastrophic flooding if the dam system fails. A system to rapidly warn citizens of danger is important to their security.

In addition to smart lighting and crossings, the technologies, applications, and data outlined in Goal #1 will support improved safety. Addressing homelessness will help reduce the vagrant population downtown, thereby decreasing incidents of fighting, vandalism, public drunkenness, and overdoses.

Security and surveillance will be critical to increasing safety in our downtown. Our previously-mentioned kiosks will include cameras. In addition to monitoring and reporting on weather conditions, these cameras will collect data on vehicle, bike, and pedestrian traffic. They will add a level of security while carefully balancing the need for privacy.

Taking a smart cities approach to safety in the downtown will enhance our ability to identify trends in terms of traffic and mobility, both through the kiosks and apps, but also through the data collected from the cameras on our kiosks and potentially our street lights. This will also support open data for all to access and use in creating additional applications and innovations.

To measure our progress, we will track the number of incidents requiring police presence downtown, we will perform an annual neighbourhood satisfaction survey of the local businesses, and we will survey traffic to the downtown semi-annually, breaking down the traffic in terms of vehicle, cyclist, and pedestrian.

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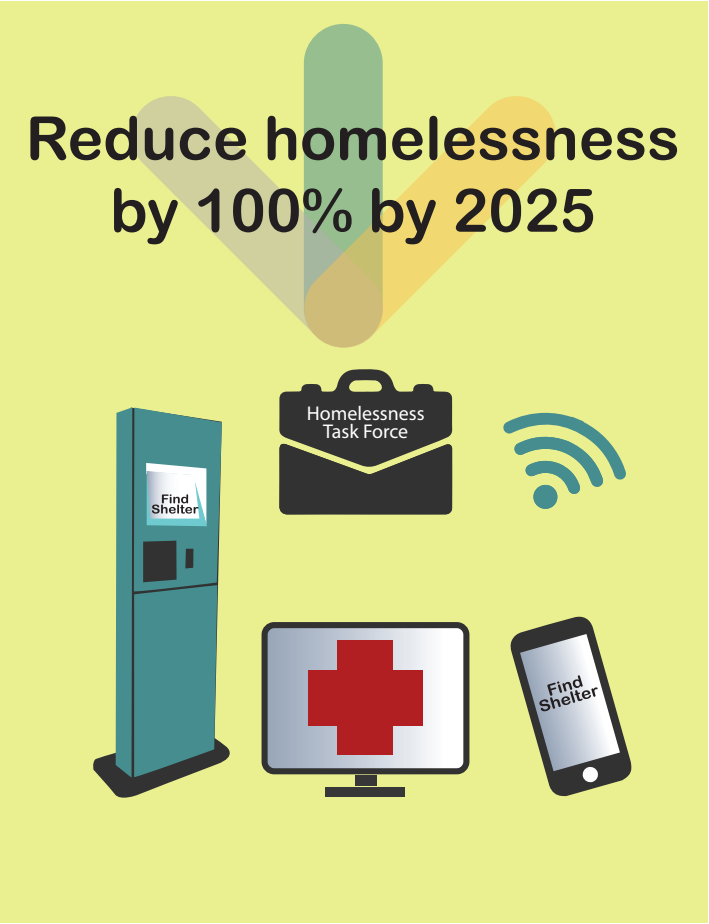
Smart City Rationale

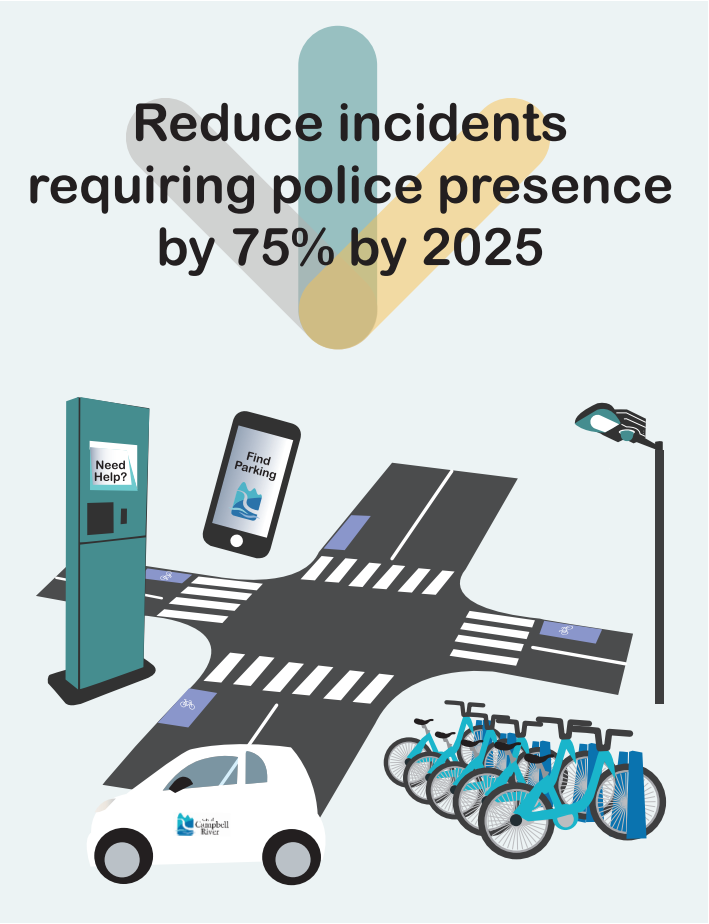
The term "smart city" is in every progressive city's lexicon. However, we know this buzz word won't be around in ten years. Either you are a smart city, or you are a city that has limited its economic development potentials and limited its ability to serve residents by improving their quality life.

Broadband infrastructure, mobile phones, and wireless connectivity is the foundation to growing a smart city. IoT applications allowing devices and sensor to interact with analytical systems and using machine learning to turn real-time data into improved responses and insights are another facet of a smart city. The City of Campbell River recognizes that being a smart city means we will use technology and data to better serve our citizens.

Campbell River's economy, similar to many Canadian cities, was built around the resource sector, primarily forestry. In 2010, Campbell River's pulp and paper mill closed its door, ending employment for over a thousand people. Campbell River has figured out how to reinvent itself recognizing the need to diversify from a resource economy. We see this with investments such as the municipal broadband network and through work done in our Refresh Downtown strategy, CRLive street strategy and through programs like Economic Development's Modern Entrepreneur workshops.

Building on this strong foundation, implementing our smart city initiative will allow us to continue diversifying our economy and improving the quality of life for our residents.





SHAPING THE CHALLENGE STATEMENT

The City of Campbell River recognizes that ongoing community engagement is critical to the success of creating a Smart City. Our community members are diverse, innovative, and dedicated to improving our city – they have been, and will continue to be, our greatest resource throughout this initiative.

For our application, we have taken a community-driven, bottom-up approach where citizens are essential to the design and development of our smart city. This is different from our approach to past projects where we have used a top-down policy, with the City proposing projects based on plans and strategies and then asking Citizens for feedback.

Community engagement was integral to developing our Challenge Statement. We took a multi-faceted approach to seeking input from a wide range of community members. This included digital, social, radio, and print media, an online engagement forum, dedicated events, phone calls, and in-person meetings.

Using various forms of media, we broadcasted our message to the community, requesting their brilliant ideas for how to use technology and data to solve big challenges in Campbell River. Our first step was to build a website dedicated to community engagement. Connect.CampbellRiver.ca served as a platform for sharing information and collecting input from residents. We provided different options for the format of people's submissions – they could submit ideas to be voted on, tell a story with video and images included, or provide a private response via a confidential survey. We received more than 55 submissions and 158 votes through this platform – an overwhelming response given the short timeline and our community's size!

Collaborating with a local digital media company, we produced a video explaining the Challenge and soliciting feedback with a call to action. This video was shared on Youtube, Facebook, LinkedIn, campbellriver.ca, and our community engagement website, connect.campbellriver.ca. Across our social media platforms, the video was viewed more than 2,800 times, which helped to magnify our reach.

In addition to the official video, we shared short media clips on Facebook and LinkedIn to remind community members of the need for input and support our print and in-person marketing efforts. The combined viewing for these exceed 1,700. Some community members actually provided their suggestions in the comments sections of these videos.

Beyond digital media, the Smart Cities Challenge team took advantage of radio interviews, newspaper articles, and press releases. This included a CBC radio interview, articles in the Campbell River Mirror, the Business Examiner, and our own newsletter, In the Spotlight, along with press releases from City Hall and highlights of public Council meetings. As a result, we received phone calls, emails, and online submissions for our Smart Cities Challenge.

While going online proved to be an efficient way to solicit feedback, our in-person engagement was critical in reaching a broader audience. Meeting people face-to-face enabled us to articulate the Smart Cities Challenge and ask questions to inspire residents to come up with innovative ideas and solutions to problems. Our in-person engagement included:

- Open House at City Hall – approximately 20 attendees
- Speaking at a Rotary meeting – approximately 75 members
- Speaking at a River City Business Network meeting – approximately 20 members
- Speaking at a Young Professionals of Campbell River (YPCR) meeting – met with approximately 8 professionals
- Attended two digital media classes at Carihi Highschool and one media class at Timberline Highschool
- Spoke at Berwick by the Sea (Berwick Retirement Community)
- Met with representatives from our local First Nations
- Had numerous phone calls and email exchanges with community members to request and collect their input
- Met with community members via our Street Team, which used iPads to collect ad-hoc input

How We Represented the Community's Diversity

Throughout this process, we were committed to representing our community's diversity. We offered citizens multiple ways to contribute, dedicating time in-person to various groups, and connecting with youth, families, business owners, non-profits, seniors, and First Nations. Connecting and partnering with local groups like our local RCMP, Sobering Assessment Centre, Vancouver Island Health Society, the Strathcona Regional District, and North Island College further enhanced our engagement.

Links Between Challenge Statement and Engagement Feedback

We received a broad spectrum of ideas throughout the engagement process, so we collected all of the input and summarized it into the following categories:

- General municipal and business services
- Smart Transportation
- Public safety, security and crime prevention
- Real-time locating services
- Smart Buildings
- Smart Lighting
- Smart Housing
- Smart Energy
- Smart Education

Within these categories, the key themes of a vibrant and welcoming downtown, public safety and crime prevention, transportation and mobility, and support for our vulnerable citizens all emerged. We used these themes to develop our Challenge Statement, a process that took weeks as we continued to incorporate feedback from community members, City staff, and Council.

With our draft Challenge Statement in hand, we continued to engage with the community. Council and City staff provided direction to guide what was achievable and aligned with the City's goals, existing strategies, and plans

.

We held a meeting in which representatives from local business, the local college, and staff reviewed our Statement and helped further refine it. We also sent our draft application to members of the tech community to help assess the technical components.

Past Engagement Informed our Challenge Statement

While our Smart Cities Challenge engagement was critical to developing our Challenge Statement, much of our past community engagement also informed the process and statement creation.

Refresh Downtown Strategy

Over the course of 2016, an estimated 1,000 people gave input into Refresh Downtown through participation in online sur¬veys and public consultation events. This included numerous downtown stakeholder groups, including the Heart of the City BIA, Pier Street Association, Tidemark Theatre, Library, Young Professionals of CR & CR Art Gallery, among others. Valuable technical input was received from City staff from all City departments.

The goal of the Refresh Downtown Strategy is to make the downtown "a vibrant center of our community."

We feel that creating a living lab in the downtown area will draw people to this area. Smart applications will also allow us to measure the number of people entering the downtown area. In addition, lighting and wayfinding is a key design principle in this plan.

CRadvantage – Municipal Broadband Network

The City of Campbell implemented an extensive engagement strategy over the project's two-year term. Over 30 presentations, community workshops, budget and strategy sessions were completed. A partial list of participating agencies is outlined below:

- Province of British Columbia
- Union of B.C. Municipalities
- Island Coastal Economic Trust
- Communications Infrastructure Committee of B.C.
- BC Broadband Association
- Strathcona Regional District
- Campbell River City Council
- Campbell River Creative Industries Council
- Campbell River Chamber of Commerce
- Campbell River Downtown Business Improvement Association
- Campbell River Rotary
- Wei Wai Kum First Nations
- School Board 72
- North Island Employment Foundations Society
- Broadstreet Properties Inc.
- Playtime Gaming Casino
- Quinsam Communications
- North Island Communications

Plans to sustain engagement throughout the development and engagement process:

We will practice data-driven engagement by using data derived from smart tools and apps to inform our engagement tools and materials. Part of our plan for using the $250,000 grant is to develop a Smart City Strategic Plan which will include a long-term engagement strategy. The framework will be flexible enough to adapt to changes and opportunities. The strategy will involve regular meetings with the Joint Advisory Board, made up of residents, social service representatives, and the Downtown Business Improvement Association.

Other key components:

1. Identify and prioritize: We will continue using social media, events, and in-person consultation to understand the problems facing our citizens and apply technology to solve these problems. We will also create a strategy to look at data and information gathered from sensors, artificial intelligence, and machine learning, and match that to the specific requirements of citizens and businesses.

2. Be mindful: Recognizing that not all citizens are comfortable with technology, we will incorporate tools such as natural-language-powered virtual personal assistants to help them get comfortable with technology. We have found that storytelling can be used to pique citizen interest in an issue and access local wisdom. The City will continue to use storytelling to bring together diverse groups of people in the community in order to share experiences on how to improve community using technology.

3. Develop Transparency: The City of Campbell River recently released an open data portal to improve transparency, accountability, and citizen engagement. The value of open data comes from its collaborative and innovative use by city staff, citizens, researchers, non-profit organizations, other government agencies and other external users. We will continue to look at ways to improve collaboration to improve the lives of our residents.

4. Use Key Performance Indicators: We will use Key Performance Indicators (KPIs) to measure success and impact. Currently on our engagement platform, we have been tracking live activity, number of visits, visits by channel (ie., email, search engine, etc). We will build on this and look at how our different community groups interact with the Smart Cities initiatives to determine most effective channels for engagement.

PROPOSED PROJECTS

The City of Campbell River will create a living lab in the downtown area to test enabling technologies, smart applications and open data, giving us a deeper understanding of how we are impacting our vulnerable population. This insight will allow us to make adjustments for the next stage of implementation and will ensure that our work is transferrable to other areas of our community, as well as to other communities seeking to undertake similar initiatives.

We are already on our way to being a Smart City. The implementation of smart infrastructure projects, such as our high-speed municipal broadband network, a new SCADA system for water, and the Toro Sentinel Central Control Irrigation System is laying the groundwork for our city to be truly connected. To test additional applications, the City will use a living lab.

Within this lab, each smart city application will have the following characteristics:

- Gather public input.
- Implement and present solutions to identified problems.
- Open APIs to ensure easy integration and to allow for the gathering of analytics.
- Scalable to other parts of the City and to other cities.
- Flexible to accommodate both a growing and aging population.

The area selected is a mixed use area in the downtown core. It includes both our Cedar District and Cultural District, which are identified in the Refresh Downtown Strategy. Our Community Centre, the library, Art Gallery, Visitor Information Centre, and Discovery College are all located within these districts. The Community Centre provides programs and services for many of Campbell River's most vulnerable, such as seniors, children and low-income residents. Rose Harbour and the Campbell River Women's Resource Centre is located nearby. This is a safe place for women and their children.

The smart cities living lab has existing infrastructure in place to support our initiatives. There are City-maintained streetlights that will be converted into smart lights. A level 3 charging station is being installed at the Community Centre as a 10-year agreement with BC Hydro under a $2.5 million provincial initiative to increase electric vehicle adoption. The living lab also has easy access to the City's high-speed municipal broadband network.

Creating a living lab is a multiphase project. If we are selected as a finalist, phase 1 will be implemented immediately, testing 3 applications on a small scale in those first 6 months. Building on the experience gained through our pilot project, we would expand scope and geographic reach to include the phase 2 applications. Additional applications will be tested as partnerships evolve and resources become available.

The City of Campbell River will create a Smart Cities Advisory Board from Smart City Leaders within the organization and partners as outlined in question 10 of this application. The advisory board will determine which projects can best support the challenge statement while supporting the City's long-term goals, strategies and plans.

Smart Applications

Web Linked Kiosk (Phase 1)

The first web linked kiosk would be installed and tested at the Community Centre. This terminal would be Internet of things (IoT) enabled and provide:

- Free Wi-Fi
- Maps and transportation information
- Emergency alerts
- Phone capabilities and charging outlets
- Tools to share information such as employment, housing, and food availability updates
- System for emergency assistance requests to be routed to emergency responders.

All of the data collected by the kiosk would be processed to provide statistics back to the community.

The kiosk would serve as a cornerstone to a holistic approach addressing the causes of homelessness such as substance abuse, joblessness or inadequate mental health care. A holistic approach recognizes each person as an individual with different needs rather than treating homelessness as a monolithic issue. It enables the individual to access the services andinformation they need and provides a means for support workers to connect with them.

Benefits:

- Supports our vulnerable citizens by providing and collecting information about warming centres, available beds, food, employment opportunities and health alerts.
- Supports community safety and security through the emergency alerts and system for routing emergency assistance requests.
- Supports economic development by providing residents and visitors more information about events and transportation routes in Campbell River, helping to increase event awareness and participation. It also stimulates the community to learn more about itself.

Live Video Feed (Phase 1)

Integrating with our existing video collection system, a live video feed mounted on the kiosk would provide a livestream of both pedestrian traffic and busy roads. Pedestrian traffic includes our vulnerable population, frontline workers, and the non-marginalized population.

The live video software aggregates traffic data, integrating and disseminating it at a control centre for monitoring and management. It enables a variety of incidents to be detected within seconds: stopped vehicles, wrong-way drivers, queues, slow moving vehicles and fallen objects. Residents would be able to check road conditions and congestion from their mobile devices.

Benefits:

- Enhanced security through proactively and intelligently monitored public spaces.
- Improved safety for our vulnerable population and frontline workers, as well as residents and visitors.
- Improved safety for drivers as they would be alerted to avoid dangerous situations and accidents.
- Improved data collection and analysis as all systems would be integrated and live.
- Reduced traffic, as drivers could make informed decisions on alternative routes to reach their destination quicker, avoiding adding to traffic queues.
- Enhance the drivers' overall travelling experience in Campbell River.

Smart Lighting (Phase 1)

In 2012, in an effort to reduce costs, the City began replacing high-pressure sodium (HPS) with more efficient LED lamps. The project is scheduled to be complete by 2020. In addition to LEDs, the City will add a speaker system for emergency public announcements. There are 2 dams to the west of the city. It is predicted that during a catastrophic earthquake the dams would breach, resulting in 4-to-6 metres of water flooding the downtown core within 30-to-40 minutes.

Smart lighting will support the integration of WiFi hotspots so that each street light will provide access to the internet, creating a powerful WiFi mesh and free WiFi to anyone in the downtown area.

Benefits:

- Improved safety, as light levels would increase if there were activities ending later in the evening at the Community Centre or Theatre. The lights can also be made to flash, deterring unwanted street behaviours. Built-in speakers would be used for broadcasting public address announcements in case of emergencies.
- Reduced energy cost. It's estimated that as much as 40 percent of a city's energy budget is consumed by street lighting. Some cities with smart lighting are reporting it can save up to 50% of these costs.
- Improved services levels, as outages would be immediately detected by the system and not by the public as they come across them.
- Adding free Wi-Fi would increase customer satisfaction and decrease business overhead.

Virtual Health Care Support (Phase 1)

Whether through kiosks, home computers, or mobile phones, Virtual Health Care provides enhanced accessibility for our disabled and vulnerable sector to much-needed services. It allows teams of specialists to review consultation sessions, reduces hospital admissions, and provides real-time support during home convalescence. Ultimately, it reduces the strain on our health care system.

Benefits:

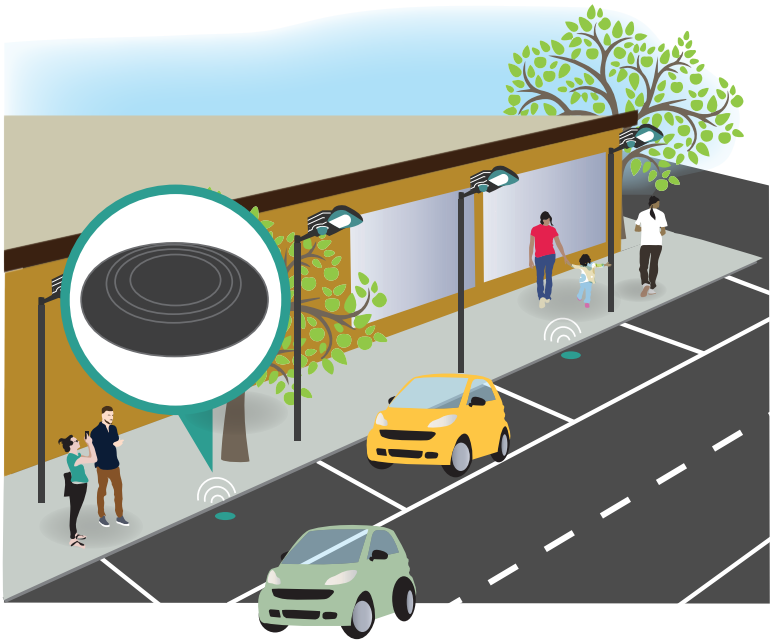
- Provision of real-time crisis hotline through kiosks.
- Enhanced access to vital health care services for our vulnerable citizens, including the disabled and seniors.
- Anticipated reduction of administration time and cost associated with face-to-face health care.

Smart Transportation Parking Sensors (Phase 1)

Install smart parking devices in the Community Centre parking lot and along Shoppers Row in front of the Tidemark Theatre and Library. We anticipate using something similar to what Libelium has released, which is a smart parking node designed to detect available parking spots. The sensor can be installed on the surface or underground. Residents then use an app to locate available parking spots.

Benefits:

- Improved safety because car crime hot spots can be identified against available parking spots.
- Optimized parking, as users find the best spot available, saving time, resources and effort.
- Management costs and greenhouse emissions would decrease as more automation and less manual activity saves on labor costs and driving time, ultimately reducing the global environment footprint.
- Parking times would not need to be manually enforced by having traffic authorities visit each parking spot and mark tires. Again, this would help in reducing our environmental footprint.
- Traffic flow would improve as fewer cars would be driving around in search of an open parking space.



Electric Bike (E-Bike) Share Program (Phase2)

An electric bike share program would reduce traffic congestion and lower pollution, offering a very affordable and convenient way to get around the City. The City of Campbell River would implement a program similar to Spin from San Francisco, which offers shared e-bikes are rates charge in 15 minute increments, with options for annual membership and business discounts. In Campbell River, this program would include a docking station at the Community Centre near the electric vehicle level 3 charging station and one in the south end of town at North Island College, near the existing charging station.

Benefits:

- Affordable transportation mode for vulnerable population.
- Supports a healthier community as it encourages more biking.
- Breaks down barriers to traditional biking such as hills, disabilities, age, and distance.
- Reduced Green House Gas emissions by reducing the number of gas and diesel fueled cars on the road.
- Breaks down barriers to traditional biking such as hills, disabilities, age, and distance.
- Improved safety because of fewer cars on city streets.

Electic Car Sharing Programme (Phase 2)

Car sharing is a type of car rental that allows members to reserve vehicles for a few hours at a much lower expense than traditional rental services. The City of Campbell River is interested in running a program similar to BlueLA, which is an electric car sharing program in Las Angeles that aims to reduce greenhouse gas emissions and improve public health in disadvantaged communities. There would be incentives for low income users such as a rebates or discounts on the monthly fees. This program would be supported by the already-established infrastructure of a level 3 charging station at the Community Centre.

Benefits:

- Reduce costs to current car owners as it would be less expensive than owning a car.
- Reduced Green House Gas emissions by reducing the number of gas and diesel fueled cars on the road. A study done in 2014, on one car-sharing service determined that each shared car available eliminated the need for seven to eleven personal vehicles.
- Improved safety because of fewer cars on city streets and it would allow commuters to go from their destinations more efficiently. In addition, this would lead to lower wear and tear on the roads.

Smart Crossings (Phase 2)

As the population of Campbell River increases along with the number of tourists visiting, both foot traffic and vehicle traffic has steadily been increasing. Smart crossings would make our streets safer for pedestrians, cyclists and vehicles. A company called Direct Line has trialed Smart Crossings in Mitcham, south London. It's a responsive road that differentiates between people, cars and bikes automatically and adjust its road markings in real time.The road surface shows familiar red and green markings to let pedestrians know whether they can cross, then paints their crossing point with white lines at the appropriate time. It also highlights where cars should stop and separate areas for bicycles. It is flexible, and has the ability to widen and narrow, appear and disappear. Smart crossings "learn" over time and guide pedestrians to safer crossing points, managing traffic in a more fluid way during peak times for different users.

Benefits:

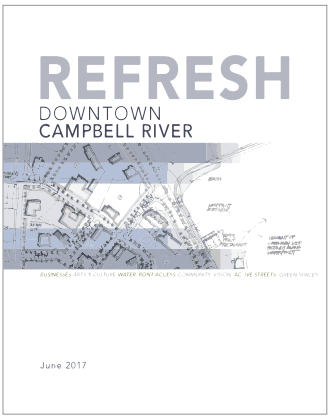
- Improved safety because in emergencies the road will flash red around pedestrians who unexpectedly walk into the road. In addition, Campbell River is currently not considered a bike friendly community and this would make it safer for cyclists.
- Enhance drivers' experience as traffic flow would be controlled.

SUPPORTING THE COMMUNITY'S PLANS

Council's Strategic Plan is a short-term plan that ranges from 2015 to 2019. Our proposal supports all four of the focus areas identified in the plan, but we will specifically address the Focus on Relationships and the Focus on Livability.

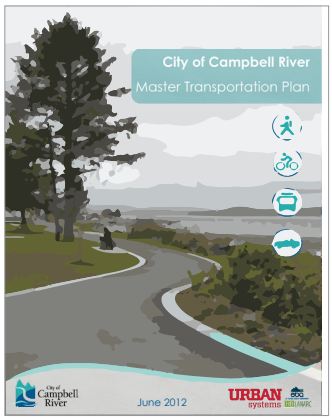
To address our Focus on Relationships, we will locate the smart cities living lab (pilot project area) in an area that provides services for many of Campbell River's most vulnerable people, such as seniors, children and low-income residents. Included in the living lab, is Discovery Community College, which serves all of Campbell River. Rose Harbour & Campbell River Women's Resource Centre is also nearby. This is a safe place for women and their children.

To address our Focus on Livability, we will test applications that improve community safety. Crime incidents in the downtown area have been decreasing since 2012, but there is a strip within our living lab where incidents are increasing. Smart applications such as a kiosk, live video streaming, and smart streetlights will help us reduce the number of crime incidence in this area.

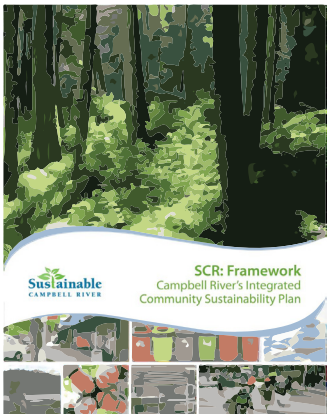


The Refresh Downtown Strategy was finalized in June 2017 and is a 10-year plan. The goal being to make the downtown "- a vibrant center of our community." Creating a living lab downtown will draw people to this area. Smart applications will also allow us to measure the number of people entering the downtown. In addition, lighting and wayfinding is a key design principle in this plan. The preliminary proposal identifies two smart applications designed specifically to meet these design principles. One is smart street lighting and the other is a smart city kiosk.

The Master Transportation Plan was created in 2012 and is a 25 year plan. It is designed "to encourage walking, transit, and cycling – to help achieve the City's overall commitments toward sustainability and livability." A kiosk, live video streaming, electric bike sharing, and smart crossings all support the Master Transportation Plan.



City's Sustainable Official Community Plan's (SOCP) is a 50 year community vision developed in 2012. The SOCP establishes an overarching policy framework to move towards sustainable development throughout the community. Other City initiatives such as the Green City Strategy, the Carbon Neutral Strategy, and the Community Energy and Emissions Plan indicate the City's sustainability priorities, in both the corporate and community context. In the SOCP, we identify that our community will be anchored by a vibrant downtown. Creating the living lab downtown will foster this environment, drawing more people to this area. It will also allow us to test smart applications that support our vision of a healthy and creative community.
This plan also has a vision for a responsible and inclusive Campbell River. We would achieve this by working with the Downtown Business Improve Association (BIA), IT and telecommunications companies, utilities, the school district, First Nations and other public and/or private parties.



COMMUNITY'S READINESS AND ABILITY TO SUCCESSFULLY IMPLEMENT

The Smart City Team

Campbell River's Smart City Team (SCT) combines exceptional agencies, partners, local expertise and resources to successfully implement a Smart City project. Under the City's leadership, this skilled and experienced group will make the most of each member's talents to achieve our Smart City vision and measure outcomes for replication throughout the community.

Project delivery approach:

(1) SCT provides leadership, governance, and continuity during and after the project period
(2) Experience with successful large scale, multifaceted project
(3) Mitigation strategies

The Team:

Led by the Project Director, the team provides technical program oversight. It assures adherence to Smart Cities Challenge policies and guidelines, sets policy, assists with resolving escalated issues, and makes recommendations to participating governing bodies.

Members:

Deputy City Manager- Project Director
Director of Operations
Economic Development Officer
Economic Development Analyst
Manager of Information Technology
Geographical Information Systems Coordinator
Smart City Leads from every department will be selected

Joint Advisory Board:

Campbell River citizens, First Nations, and business advisory group focused on technology and economic development. Accomplished experts provide strategic advice, project and oversight.
Members: Campbell River Creative Industries

Communications & Marketing:

A creative external team provides a strategic marketing plan, key messaging to foster strong community relationships and First Nations partnerships, and engagement with community stakeholders and external agencies.

External Consultant Team:

A proven, professional consulting agency will help guide our project– from definition, to goals, to successful finish as our vision transfers to everyday life in a new and smarter City of Campbell River.

With expertise across several departments, agencies, community partners and jurisdictions, Campbell River's Smart City Team has impressive experience in delivering successful multifaceted projects.

CRadvantage - Municipal Broadband Network.

In 2017, Campbell River went live with Vancouver Island's first open access municipal broadband network. This municipally owned fibre optic infrastructure allows Internet Service Providers (ISPs) to lease access to the network from the City and deliver affordable internet services to business and residential customers. By providing and maintaining this infrastructure, the City fosters a marketplace where ISPs compete for customers with incentives to innovate and less potential for monopolistic pricing. This model supports recent CRTC decisions to reduce broadband cost by bolstering the wholesale market.

Community partners, local First Nations, government agencies and the Province of British Columbia (documentation attached) support this City initiative.

The City of Campbell River's CRadvantage network will play a significant role in fostering the development of a major fibre optic broadband deployment on Vancouver Island. BC's Connected Coast project will connect 56 First Nation communities and 154 communities, further improving internet services and reducing costs in the downtown. Campbell River will serve as a primary integration point for this network.

Open Data Catalogue

In March 2018, the City released an open data catalogue allowing public download of geospatial data. Increased access to data and information improves City transparency and accountability, and open data supports the tech community by encouraging innovation and problem-solving through new ideas and applications. The GIS Department worked with other departments and data users who frequently request data from the City to determine which data in which formats are most useful.

ClearSCADA

In September 2017, the City went live with a new Scada (Supervisory Control and Data Acquisition) System by Schneider Electric. This yielded improved communications between 22 sites and the virtual servers by removing redundant hardware and changing to a DNP3, (Distributed Network Protocol), from Modbus. The City will continue to add sites to ClearSCADA.

Electric Vehicle Charging Stations

In 2013, the City began installing Electric Vehicle (EV) Charging Stations with provincial funding for the Community Charging Infrastructure Fund. Six Campbell River locations host 11 stations. EV charging stations serve local and visiting low-emission vehicles, helping to reduce greenhouse gas emissions.

In 2017, the City signed a 10-year agreement with BC Hydro as part of a $2.5 million provincial initiative to enhance the use of electric vehicles and regional charging availability. Campbell River will host a Level 3 charging station, which can charge a battery from depleted to full in roughly 30 minutes.

Toro Sentinel Control Irrigation System

The Parks Department began installing/operating the Toro Sentinel Central Control Irrigation System circa 2010. Currently, 43 sites use Toro, and the City plans to have all 120 irrigation systems operated by Central Control. The department uses wireless Aquaterr communications to operate through Central Control where it's not feasible to connect irrigation wiring to a satellite unit.

Structures, Processes and Practices

Based on past projects, key elements for successful project planning and implementation involving different departments and stakeholders will include:

- Team members collaborating via a cloud-based platform on time and cost planning, identifying and managing risk, and tracking and managing budgets. The online platform also ensures smooth handover of new assets to operational teams while tracking and controlling project documentation.
- Training for the Smart City Joint Project Team will include how to update existing standard operating procedures (SOPs) as smart technology and applications will change how we currently do business.

Mitigation Strategies and Performance Measurement

The SCT recognizes that smart use of technology improves quality of life for citizens. Our Smart City approach has already been recognized, as Campbell River is a Smart 50 award winner. Our project aims to enhance Campbell River for all people living and working in our community and to foster development and opportunity for future generations.

Our SCT assembles our best talent to manage organization-wide innovation. With the understanding that gaps will arise, the SCT will secure external consultants with a successful track record for delivering smart city initiatives in rural municipalities.

In 2002, the City implemented GIS (Geographic Information Systems) to provide advanced mapping functions. With smart cities innovations, this system's dynamic feeds, analytics and data modeling will be equipped to help staff diagnose infrastructure hazards and events.

Several key performance indicators (KPIs) will be used to measure tangible success. Preliminary measures are modeled partially on the EU-funded CONDUITS project, with KPIs for traffic efficiency, pollution reduction, road safety, social inclusion etc.

(See https://www.polisnetwork.eu/uploads/conduitsnew.png)

PLAN FOR USING THE $250,000 GRANT

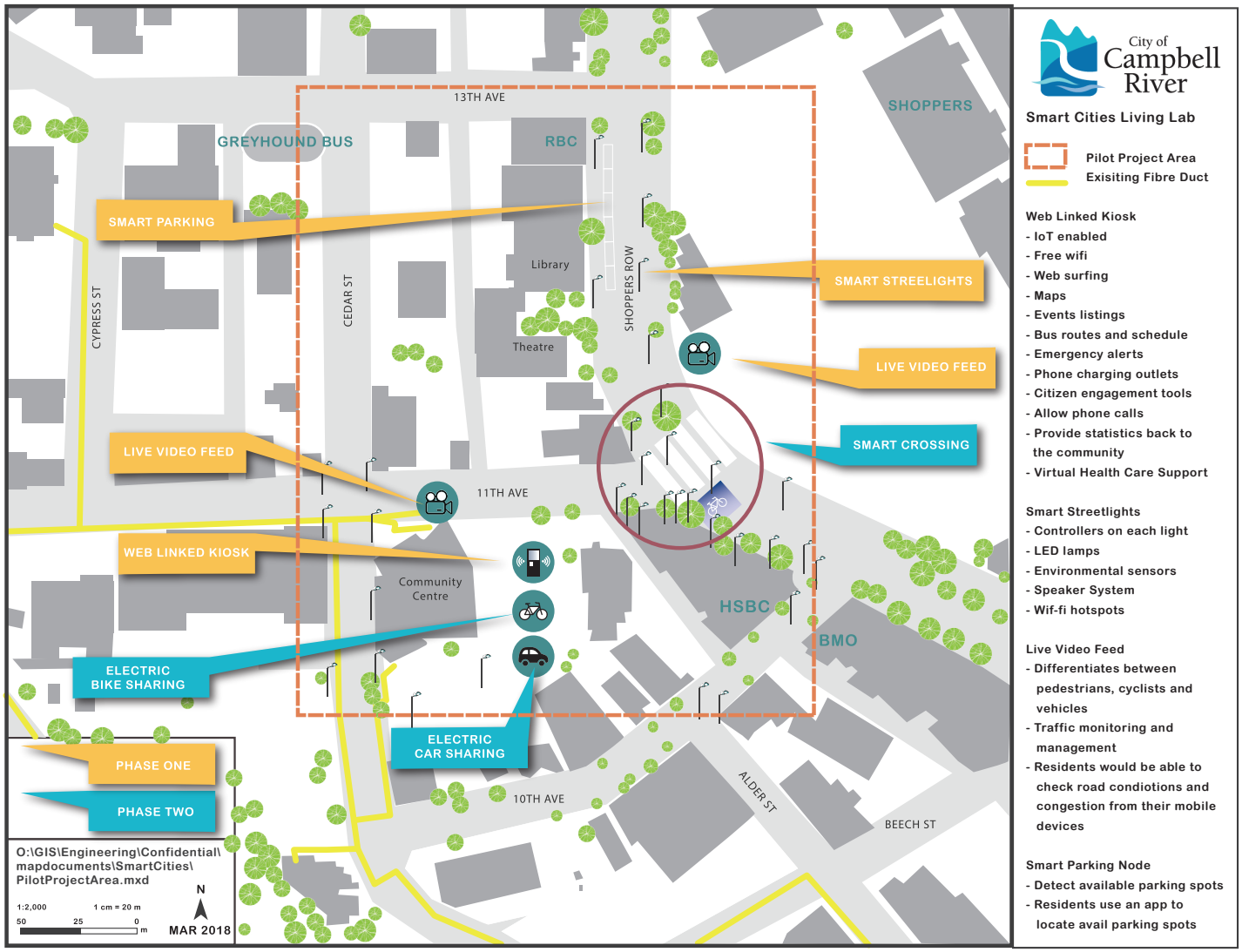
The grant money would be used in the following areas:

We will develop a smart cities strategy that supports other City initiatives such as the Sustainable Official Community Plan (SOCP), Council's Strategic Plan, the Green City Strategy, the Carbon Neutral Strategy, the Community Energy and Emissions Plan, Refresh Downtown Strategy and the Master Transportation Plan. The strategy will include IoT technology and systems that will produce significant public value, as well as private investment. Key elements of the strategy will include inventorying our existing smart applications deployed by the City, identifying how to tie these applications together and adding new applications for the best return on investment (ROI). It will also include identifying tangible benefits for residents, creating a plan to attract private financing, ensuring cybersecurity addressing privacy concerns from citizens, and developing a smart cities training plan for City employees.

We will create a smart cities living lab to test various applications using enabling technologies, smart applications, and open data. The City will create inter-disciplinary and applied research and technology development by inviting technology vendors, utilities, start-ups and research institutes to work with a range of end-users to co-create solutions.

The area selected for the living lab is a mixed use space in the downtown core. It includes both the Cedar District and the Cultural District as identified in the Refresh Downtown Strategy. It includes the Community Centre, the library, an area where a new mixed use development has been proposed and a community college. The Community Centre provides programs and services for many of Campbell River's most vulnerable, such as seniors, children and low-income residents. Rose Harbour & Campbell River Women's Resource Centre is located close by. This is a safe place for women and their children. There is a busy intersection and a public gathering area that hosts outdoor events such as concerts and festivals. There are City maintained streetlights around the Community Centre and along Shoppers Row that will be converted to smart lights. The smart cities living lab has existing infrastructure in place to a support smart cities initiative.

The initial four projects will be a web linked kiosk, live video feeds, smart parking and smart streetlights.



We will form an advisory board of key city employees, utilities providers, Indigenous communities and agencies, tech companies, North Island College, nonprofits and other government agencies.

The City recognizes that collaboration plays a fundamental role in the success of building a smart city. We will leverage the grant money as seed funding and look at forming partnerships and finding matching funding from the private sector and educational institutions.

PARTNERS INVOLVED IN PROPOSAL

The partners listed below have agreed to support the City's application.

Strathcona Regional District (SRD)

The SRD supports residents with a diverse range of services including water and sewerage systems, fire protection, land use planning, parks, recreation and emergency response.

North Island College (NIC)

NIC offers industry-approved skills training, nationally recognized credentials, networking opportunities, applied skills and knowledge. The City works with NIC developing programing and see potential for applied research partnerships as our project develops.

Campbell River Art Gallery

The Art Gallery is impacted by issues in the downtown core as it directly impacts its ability to attract new visitors to our Art Gallery.

David Baar

David Baar is a physicist, engineer, and computer scientist. He has been directly involved in a wide span of technology research and development in physics, materials science, and computing. He has had a longstanding interest in remote sensing, visualization, numerical modeling, and geospatial technologies.

Vancouver Health -- Mental Health Society

Vancouver Island Mental Health Society, is a non-profit organization that specializes in mental health and addictions services for vulnerable and marginalized individuals. Vancouver Health provides services to the City of Campbell River operating the Sobering and Assessment Center, witnessing firsthand the many needs of vulnerable people in this community.

Esri Canada

Esri Canada has focused on the implementation and use of GIS technology and GIS best practices. The ArcGIS Platform is scalable, open and provides an enterprise-wide foundation for enhanced data management supporting collaboration, engagement, insight and knowledge about community issues. It delivers valuable efficiencies by providing tools for enhanced planning and decision-making for City operations and public services. Esri GIS is already widely by the City of Campbell River. The ArcGIS Platform can serve as an information hub for building Smart City infrastructure and processes that will align with the key goals of the Smart Cities Challenge -- to provide more efficient and sustainable government systems, and improve livability and opportunities for their people.

The City has identified and is and/or will be in contact with the following as potential partners:

- Wei Wai Kum Nation
- Wei Wai Kai Nation
- Homalco Nation
- Tlowitsis
- Nanwakolas Council
- Laich-Kwil-Tach Treaty Society
- Kwakiutl District Council
- John Howard Society
- Women's Transition Home
- Community Living BC
- Fortis BC
- Campbell River Creative Industries Council
- Destination Campbell River

Addressing Future Gaps in Partnership

Recognizing that strong partnerships will ensure success of this project, the City will identify required skills and expertise and inventory the skills our partners bring to the project. This will ensure we are able to deliver this project. Where gaps exist, the City will seek partnerships. Having the right partners strengthens the skills, competencies and abilities of the whole team.