



OURFOODFuture

GUELPH-WELLINGTON – Canada's
first food smart community

A Smart Cities Challenge initiative

City of Guelph/County of Wellington

Final Proposal

Smart Cities Challenge

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foodfuture.ca





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Our Food Future: Executive Summary

Smart Cities Challenge Statement: Guelph-Wellington will become Canada’s first technology-enabled Circular Food Economy, reimagining an inclusive food-secure ecosystem that increases access to affordable, nutritious food by 50%, where “waste” becomes a resource, 50 new circular businesses and collaborations are created, and circular economic revenues are increased by 50%: 50x50x50 by 2025.

Everyone needs to eat. However, one in six families experience food insecurity, 67 per cent of residents in our region don’t consume a healthy diet, and the cost of healthy food keeps increasing. Around the world, more than eight million people are hungry or undernourished, and the global population continues to grow. Meanwhile, in Canada roughly one third of our food is lost or wasted. Much of that ends up in landfill, creating greenhouse gas emissions.

Guelph-Wellington aims to address these issues by becoming Canada’s first circular food economy. Leveraging local expertise, big data and the latest technology, we will transform our food ecosystem into an “urban/rural living lab” where researchers, social innovators, farmers, entrepreneurs and other community partners collaborate to solve complex food problems.

As we describe in Chapters 1–3, Our Food Future will achieve our goals through nine Pathfinder projects:

Goal 1: increase access to affordable, nutritious food by 50 per cent

- Project 1: assess the Guelph-Wellington food environment
- Project 2: create a circular food security and health action plan

Goal 2: create 50 new circular businesses and collaborations

- Project 3: establish a circular food economy innovation hub (iHub)
- Project 4: coordinate a “Harve\$t Impact Fund” to support circular enterprises
- Project 5: foster new food economy skills and training

Goal 3: increase circular economic revenues by 50 per cent by unlocking the value of “waste”

- Project 6: develop and share circular business tools and services
- Project 7: launch a “reimagine food” campaign
- Project 8: increase the circularity of carbon credits in the food system
- Project 9: increase circularity in municipal waste systems to drive innovation along the food value chain

These Pathfinder projects will be supported by:

- A **data and technology strategy** — A Data Utility providing secure, transparent access to data (Chapter 7) and a technology strategy to support inclusive and open innovation
- A comprehensive **engagement strategy** to create a shared vision and ensure broad-based buy-in from stakeholders and the community (Chapter 6)

- Demonstration projects — Community-driven collaborations supported by Our Food Future that tackle food-related challenges

In Chapter 4, we lay out how several key smart cities technologies will help drive these projects. An open-source data collaboration platform will allow stakeholders to share and use different data streams. Meanwhile, a “concierge” platform will serve as the primary user interface for Our Food Future, allowing researchers, students, entrepreneurs, agencies and government to collectively solve food problems. Several other smart technologies will support project-specific needs — from waste-collection sensors to distributed ledger technologies (such as blockchain) that track carbon credits.

Our governance model (Chapter 5) includes a Smart City Office to support our workstream tables and project delivery partners. An advisory board of management made up of partner representatives will provide direction and oversight, while a community steering table and expert advisory panel and will provide strategic input and advice.

Robust and inclusive engagement (Chapter 6) will be critical. Through a variety of digital and in-person channels, we will work to ensure everyone sees a role for themselves in this wholesale change initiative, recognizing the diversity of accessibility needs within our community. Our smart initiative also depends on data. Chapter 7 discusses the stringent measures we’ll put in place to allow us to gather that data appropriately, manage it securely and protect privacy.

Reaching these milestones will require a \$16,755,931 budget, which includes \$4,008,375 in in-kind contributions from partners and funders (Chapter 8) and application and receipt of pending FedDev funding of \$2,747,663.

Chapter 9 lays out our plans to meet relevant municipal, provincial and federal requirements, legislation and policies.

Throughout this proposal, we demonstrate that **Our Food Future is replicable**. We are committed to using and developing open-source technology and sharing our learnings, insights and best practices. We are already working with national and global partners to develop a Circular Food Economy Roadmap for others to follow. **Our Food Future is also scalable**. The success we achieve over the next five years will lead to a sustainable regional food ecosystem. Meanwhile, the technologies and strategies we develop can be applied well beyond the food system.

Finally, **Our Food Future has the potential to be truly transformative**. We could have made this simple, but the stakes are too high and the opportunity is too great. Data and technology can help enable Canadian innovation, but only if we have a clear vision for the future. Using nature’s circular approach as our inspiration, we believe it’s possible to ensure people have access to affordable, healthy, nutritious food; reduce the environmental impacts of the food system; and build economic prosperity at the same time: people, planet, prosperity.



1.0 Vision: Our Food Future

Food is a fundamental requirement of life on this planet. However, in our region approximately 67 percent of residents don't consume a healthy diet, one in six families experience food insecurity, while the cost of healthy food has increased 27 per cent in the last eight years.^{1,2} Nor is this just a local problem. Currently, 8.21 million people around the world are hungry or undernourished.³ If consumption and population growth trends continue, the global population will increase to 9.1 billion by 2050 and caloric demand will increase by 70 per cent.⁴ Meanwhile, we throw away roughly one third of our food.⁵ Much of that ends up in landfill, where it creates methane: a greenhouse gas 25 times more powerful than carbon dioxide.

We believe something better is possible. For decades, a wide range of stakeholders within the City of Guelph and Wellington County have been working in various capacities to tackle different aspects of these problems. In 2018, catalyzed by the Smart Cities Challenge, we came together to create an ambitious vision. Our aim is to establish a connected and sustainable regional food system where everyone can access affordable, nutritious food; nothing is wasted; and the impact on our environment is minimal.

Instead of the current linear economic model of “take-make-dispose,” we envision a food system inspired by nature’s circular approach that is economically, socially and environmentally sustainable. Circular economies minimize waste and maximize resources, keeping as much energy, nutrients and materials as possible cycling through the system. So, for example, byproducts from one food processor can be used as raw material for another industry, or household organic waste can be turned into fertilizer to grow more food.

We imagine a system where food experts and entrepreneurs unite to tackle our most complex food challenges. Even in farming operations that already incorporate many principles of circularity, we see an opportunity to apply data and smart technology to drive further success.

We want to ensure everyone in our community has access to affordable, nutritious food required to live healthy, productive lives. We want to create new jobs and vibrant economic opportunities within a circular, collaborative ecosystem. And we want to solve food problems using strategies that repurpose and find value in the outputs our current system treats as waste — the byproducts of an unsustainable linear food economy.

In our [initial Smart Cities proposal](#), we laid out our 50x50x50 by 2025 initiative: to increase access to affordable, nutritious food by 50 per cent, create 50 new circular businesses and collaborations and increase circular economic revenues by 50 per cent by recognizing the value

¹ Statistics Canada. Canadian Community Health Survey 2012-2014.

² Nutritious Food Basket for WDG 2018 (<https://www.wdgpulichealth.ca/nutritious-food-basket-wdg-2018>)

³ <http://www.fao.org/state-of-food-security-nutrition/en/>

⁴ http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf

⁵ <https://lovefoodhatewaste.ca/about/food-waste/>



of “waste” — all by 2025. As a result, Guelph-Wellington will become Canada’s first technology-driven Circular Food Economy, providing a replicable process for other communities to follow.

1.1 Refinements of original vision

Extensive engagement with stakeholders, experts and the broader community over the past nine months has validated our [initial vision](#) — a vision we have now branded “**Our Food Future.**” Based on feedback gained through hundreds of hours of meetings and deep dialogue, we have further refined our goals and proposed projects. The key adjustments are as follows:

Impact goal #1: Increase access to affordable and nutritious food by 50%. Based on conversations with community members and stakeholders, we further clarified and defined the terms of this goal to include improving physical and economic access to nutritious food, increasing opportunities for nutrition education and skill-building, and improving promotion of nutritious foods. A public dashboard will be created to mobilize data, support evidence-informed planning and track progress towards the impact goal.

Impact goal #2: Create 50 new circular businesses and collaborations. We have broadened this goal to include technologies and jobs, since developing expertise in circularity will drive innovation within existing businesses as well as spur the creation of new businesses. The jobs resulting from Our Food Future may also include those transitioned from traditional sector roles into jobs that will contribute to the circular economy in Guelph and Wellington.

Impact goal #3: Increase circular economic revenue by 50% by recognizing the value of “waste.” We specified that we will prevent food waste by reducing avoidable food waste and re-purposing what cannot be avoided. The 50 per cent increase in circular economic revenue will thus be generated through the savings achieved from reducing waste, as well as from newly valued uses of material that is currently discarded.

Project categorization. We determined that several of our projects serve multiple goals. For example, value/asset mapping will be used to achieve all three goals. We have therefore recategorized these projects, making it clear which goals they serve.

Valuing Waste as a Resource — Circularity in Municipal Waste Systems. In the ideation phase of this process, we discovered greater opportunities to leverage our combined Guelph and Wellington municipal waste systems to drive innovation, develop new technology and work with partners to reduce food loss and waste along the value chain, from farm to fork and beyond.

Circular Food Economy Innovation Hub. We replaced our plan to create a lab with plans for an Innovation Hub (iHub). As the innovation engine of this new system, the iHub will help build the necessary technological and data capacity to support a sustainable regional food economy.

Our technology strategies (Chapter 4), engagement strategies (Chapter 6) and data strategies (Chapter 7) will enable the successful implementation of these projects. Further details on our updated projects are provided in Chapter 3.



1.2 Meaningful to Guelph-Wellington residents

As described earlier, we launched our vision with the aim of creating an equitable food sector that ensures access to affordable nutritious foods for all of our residents, recognizing that many families within the City of Guelph and Wellington County experience food insecurity and that the cost of healthy food has increased substantially. Since then, our extensive community and resident engagement work during the finalist phase has given us the opportunity to hear directly from residents and listen to the needs of our community partners.

In an online survey, 90 per cent of respondents said they were excited to hear about our vision for a circular food economy and felt it was important to think in new ways about food. We have also engaged with residents in person at more than 30 events and locations across Guelph-Wellington. Meanwhile, we have worked directly with key community partners through 34 targeted meetings with our Steering Committee and three workstreams to better align our overall goals and associated projects with local needs. This work has served to align the circular food paths of organizations, businesses, researchers and key stakeholders.

Our engagement revealed Our Food Future vision resonates with the Guelph-Wellington community. We heard very clearly that residents believe in the importance of ensuring access to affordable nutritious food for everyone. In Guelph's recent Community Planning survey, respondents ranked Our Food Future as one of the three biggest opportunities that local businesses can take advantage of. Meanwhile, the Wellington Federation of Agriculture's survey of more than 50 local producers showed strong support for improving access to local food. They also demonstrated an eagerness to be involved in Smart Cities interventions and programs, with almost 70 per cent of producers surveyed saying they would be willing to pilot new technologies on their properties.

1.3 Ambitious, yet achievable

Creating a circular food economy is certainly ambitious, given the scale of the problem and the number of collaborators required to create effective solutions. However, this vision is achievable, and there is no better place to demonstrate how communities can re-invent the food system than Guelph-Wellington. Agri-food innovation is in our DNA. Together, Guelph and Wellington have an abundance of expertise and existing infrastructure in all three of our challenge areas — nutritious foods, circular jobs and business, and waste as a resource — creating a foundation for achieving our 50x50x50 vision.

Not only that, Guelph and Wellington are recognized as leaders in sustainability. The City of Guelph was recently recognized as a Canadian Climate Leader⁶ and has achieved silver-level recognition from the Alliance for Water Efficiency.⁷ Meanwhile, Wellington County's Green Legacy tree-planting program has been recognized by the United Nations. Now our community is ready to add a circular food economy to its achievements.

⁶ <https://guelph.ca/2018/03/city-wins-canadian-climate-leadership-award/>

⁷ <https://guelph.ca/2019/01/citys-water-efficiency-work-recognized-by-the-alliance-for-water-efficiency/>



To do this, we will leverage a number of strengths:

- 1,600 food businesses and entrepreneurs in the areas of bio-tech, clean-tech, agri-tech and food processing
- the University of Guelph, Canada’s top agriculture and food university and a world-renowned centre of research and innovation in agriculture, agri-tech, and food, home to:
 - the \$76.6-million federally funded “[Food from Thought](#)” initiative to advance research and applications in digital agriculture
 - the \$71.3-million-per-year [Ontario Agri-Food Innovation Alliance](#), a cutting-edge platform for research and innovation for the entire agri-food sector
 - the [Guelph Family Health Study](#), a long-term study designed to follow families and help children develop healthy habits, such as healthy eating
 - the [Arrell Food Institute](#), a \$40-million think tank that brings food to the fore of the public agenda
- 40 agri-food research centres
- Conestoga College, a Canadian leader in polytechnic education with specific strength in food processing technology
- The [Ontario Ministry of Agriculture, Food and Rural Affairs](#), plus many provincial agricultural and food organizations
- a strategic location in the heart of the 112-kilometre Innovation Corridor that stretches from Toronto to Kitchener-Waterloo, encompassing seven universities, 15,000 high-tech companies, a critical mass of incubators, a high-quality talent pool and access to significant capital
- close to 400,000 acres of agricultural land and over 2,500 farms
- membership in the [Ontario Food Cluster](#), a cost-sharing partnership that pools resources with government and economic development organizations to attract agri-food company investment to the area
- a community dedicated to agriculture, food and sustainability innovation, boasting 10 farmers’ markets, commercial test kitchens, and an award-winning local food program (Taste Real) made up of more than 150 local farms, retailers, restaurants, wholesalers and other partners
- innovative food programs within the school system, including
 - the Local Environmental Agriculture and Food (LEAF) program at Wellington County’s Norwell District Secondary School, which teaches youth about healthy and nutritious food, increased food literacy and food preparation skills
 - the Food School at Centre Wellington District High School, which promotes a sustainable food system for youth and the Centre Wellington community
 - Indigenous Sweetwater Teachings, led by Kyl and Bill Morrison Moose Cree/Métis, which introduces elementary and high school students to the



significant nutritional values of the Sweetwater — the sap from the maple tree, traditionally called the “the tree that builds bones”

The Smart Cities grant will allow Guelph-Wellington to harness this expertise, enabling all partners to address the scale of the problems we have identified and work towards a shared vision of a circular food economy by 2025.

1.4 Well suited to a smart cities approach

Our Food Future is a rural/urban partnership that will turn our region into a living lab, generating a pipeline of innovative technology businesses. It will also build on Guelph’s innovative [Civic Accelerator](#) model where entrepreneurs are embedded within City Hall, working alongside staff to solve community problems and transforming City Hall into a test bed for new tech-based businesses for the municipal market.

To achieve Our Food Future, we will incorporate several different smart cities technologies, as well as leverage existing technologies and data-capturing tools across the value chain and throughout our community.

Using **artificial intelligence (AI)** and **mapping technologies** (Chapter 4), we will gather crucial data on everything from the type of food waste residents discard to the locations where access to nutritious food is problematic to how much usable food wasted in the value chain. **Data analytics** (Chapter 4) will help us extract the insights we need to design evidence-based urban/rural policies and programs that boost access to affordable, nutritious food. Meanwhile, **connected technology** (Chapter 4) can assist with measuring and tracking the flow of food and other organic material to make business more environmentally and economically sustainable and uncover new opportunities for creating value from waste.

Our **Data Utility** (Chapter 7) will create a governance framework and a **data collaboration platform** (Chapter 4) that enables researchers, students, entrepreneurs, agencies, and government to create value from shared data and collectively solve food problems. To view this data and measure our progress towards milestones, we are creating **public reporting dashboards** that will track indicators (Chapter 2).

Meanwhile, the majority of local producers in Guelph-Wellington already actively use technologies such as sensors, auto-steer, GPS and video. We’ll enhance their ability to leverage smart technologies by improving and **expanding access to high-speed internet** and **piloting further on-farm technology in support of digital agriculture** (Chapter 4).

Through these projects we are establishing the infrastructure required to use data and technology across all sectors — government, not-for-profit, residents and businesses — to enhance community well-being and sustainability.

1.5 Measurable

As we detail in Chapter 2, our evaluation strategy will use multiple methods to assess the success of each individual project in reaching our impact goals and the overall contribution of

all projects to Our Food Future. It takes a learning-oriented approach, making time to pay attention to the evolution of Our Food Future, asking difficult questions, learning from challenges and sticking points, and course-correcting along the way.

1.6 Progress towards impact goals

Throughout the finalist phase of the Smart Cities Challenge, we have developed a strong brand and brand narrative for Our Food Future, along with a comprehensive engagement and communications strategy. We have worked with our community partners and collaborators to further refine and articulate our project goals, activities and outcomes and create detailed implementation plans. Should we be selected as a winner, we are well positioned to hit the ground running.

Table 1.1 Progress on impact goal 1: Increase access to affordable, nutritious food by 50%

Projects	Progress to date
Guelph-Wellington food environment assessment	<ul style="list-style-type: none"> • Identified current available data sources and owners • Identified additional data needed to support evidence-informed planning and the research required to collect that data • Established partnerships within the community and with external collaborators specializing in food environments who can ensure our process is replicable and guided by evidence and best practices • Started geospatial mapping of neighborhood food access within Guelph-Wellington
Circular food security & health action plan	<ul style="list-style-type: none"> • Developed a five-year logic model for projects in alignment with impact goal number one • Developed a dashboard prototype to serve as a data visualization, knowledge mobilization and evaluation tool to demonstrate progress • Reviewed municipal, national and international intervention recommendations to identify action areas for impact and associated measurable indicators • Reviewed promising practices for programs and policies that can be implemented at a municipal level

Table 1.2 Progress on impact goal 2: Create 50 new circular businesses and collaborations

Projects	Progress to date
Circular food economy	<ul style="list-style-type: none"> • Released a public discussion paper on our model for a “Circular Food Economy Innovation Hub (iHub)”

<p>Innovation Hub (iHub)</p>	<ul style="list-style-type: none"> • Built a replicable and repeatable process that engages organizations and businesses in problem identification for “innovation challenges” • Developed a prototype of a “collision lab” process (see Case Study, below) • Released a Circular Economy/Smart City Challenge at the Globe Capital 2019 investment conference • Tested our iHub model with our Community Futures Development Corporation partner, providing financing to our first circular business and social enterprise • Created a Sister City partnership with Brisbane, Queensland, Australia to share learnings with their newly launched Circular Economy Lab and enable shared technology and business development
<p>Harve\$T impact fund</p>	<ul style="list-style-type: none"> • Released a public discussion paper on “Envisioning a Circular Food Economy Funding and Financing Ecosystem” • Conducted a survey of community investors that suggests enough local interest to create a \$500,000 investment fund • Conducted in-depth investor interviews • Facilitated community social finance/impact fund sessions • Began discussions for partnering with two private-sector agri-tech accelerators to establish a Guelph-Wellington office
<p>New food economy skills & training</p>	<ul style="list-style-type: none"> • Conestoga College is preparing to undertake market research to gauge interest in a post-graduate certificate in Circular Economy for Food • The University of Guelph developed an interdisciplinary training program with the Arrell Food Institute and the Food from Thought initiative to advance research and application in digital agriculture

Table 1.3 Impact goal 3: Increase circular revenues by 50 percent by unlocking the value of “waste”

Projects	Progress to date
<p>Leveraging municipal waste systems/value mapping</p>	<ul style="list-style-type: none"> • Prototyped a repeatable discovery process to visualize a food value stream, all the way from raw inputs to plate to end of life • Identified waste stream data categories and data gaps • Reviewed existing residential waste cart data and identified opportunities to extract actionable insights

Business tools & services	<ul style="list-style-type: none"> • Surveyed producers through the Wellington Federation of Agriculture to gather insights related to the overall vision and goals of Our Food Future, including technology and IT needs
Circular carbon credits	<ul style="list-style-type: none"> • Conducted a feasibility study to determine best practices for a food processor carbon credit program <ul style="list-style-type: none"> ○ The assessment identified 3 quantified opportunities to reduce food waste that are recommended for implementation or detailed assessment. These opportunities represent \$368K in potential resource savings with an aggregate payback of less than 0.9 years. ○ The recommended measures would also avoid 275 tonnes CO2e of GHG emissions and preserve the caloric equivalent of 83,000 meals • Developed the process for an “innovation challenge” to pilot the use of carbon credits as social currency using distributed ledger technology
“Reimagine food” engagement campaign	<ul style="list-style-type: none"> • Developed quizzes, surveys and face-to-face activities to collect insights and data from the public • Worked with local restaurants to understand their food waste challenges and determine potential collaborations • Established agreements that will see a minimum of six restaurants donate \$1 to local food nonprofits for each “Our Food Future” menu item ordered during a specified campaign period • Produced a “Be a Food Future Star” postcard with tips on reducing food waste, plus an online engagement survey and pledge form to drive behavioural change
Data & technology	<ul style="list-style-type: none"> • Released two public discussion papers: one on governing a digital circular economy and one on data policy

Case study: Collision Lab Prototype

During our pilot, we ran workshops with two community businesses: a social enterprise focused on equitable food access and a dairy processor. These workshops produced a number of challenges and opportunities for moving to more circular business models and then connected the teams with appropriate resources and experts to pursue solutions.

This event also identified the first circular food economy demonstration project that will be funded by the Harve\$t Impact Fund (see Chapter 3 for project details). Demonstration projects bring together funders, technology and data experts, researchers, businesses and public-sector



agencies with groups seeking to improve current initiatives or launch new social enterprises or businesses that address **all three** of Our Food Future impact goals.

1.7 Why fund Our Food Future?

Firstly, **the demand for innovation in food production is greater than ever**. Global investment in agri-food/agri-tech reached \$10.1 billion in 2017, up 29 per cent from the year before. These investments reflect a growing market for start-ups and innovators aimed at solving food challenges, offering more opportunities to incorporate circular food ideas into a sector that's undergoing transformation. At the same time, **the Canadian agri-food industry must be able to compete in the global digital economy in order to thrive**. Many established companies in many sectors have been disrupted by new business models and newly merged digital challengers. The transformative opportunities for agri-food lie in leveraging data and developing digital strategies for market growth and innovation in existing and emerging markets.

Secondly, **our initiative is replicable**. We are committed to working in an open source format, creating interoperable and portable solutions that can be broadly adapted and replicated by other communities. We have already released early chapters of our Smart City Playbook to share our ideas, successes and failures, so other jurisdictions can create circular food economies and smart cities across the country and around the world.

We have built collaborations with several organizations well positioned to share our learnings nationally and globally across many sectors:

- Government: [ICLEI](#) (a global network of 1,500+ cities, towns and regions committed to sustainability); Queensland, Australia (co-established a "[Sister Cities Initiative for Circular Economy](#)" with Brisbane); the City of Rijeka, Croatia (through our participation in the E.U. International Urban Cooperation program)
- Knowledge Transfer & Research: the [Arrell Food Institute](#) at the [University of Guelph](#); [Canadian Agri-Food Policy Institute](#); [Smart Prosperity Institute](#); [The Ellen MacArthur Foundation](#); [Ontario Centres of Excellence](#); [Digital Public](#); [Dgen](#); [Public Sector Network](#); [Alectra](#); [Public Health Ontario](#)
- Innovation & Design Solutions: [IDEO](#) (a global innovation and design company); [MaRs Solutions Lab](#); [GEHL](#) (a global leader in people-centered urban design); [Institute for the Future's Food Futures Lab](#)

Meanwhile, we are raising the profile of Our Food Future and the Smart Cities Challenge nationally and globally. To date, we've presented our vision for a circular food economy at several conferences, including:

- [Globe Capital 2019](#) in Toronto, which brought together more than 350 senior decision-makers, venture capital funds and institutional investors
- Canada's first national workshop on Food Loss and Waste Reduction, hosted by Environment and Climate Change Canada
- UN consultations on food waste and sustainable food systems



Looking forward, we'll be involved with the following major events:

- The [2019 Global Food Summit](#) in Munich, participating as an invited speaker, along with a delegation of local companies and a University of Guelph Arrell Food Research Chair
- A Circular Economy Experts Roundtable convened by Environment and Climate Change Canada to develop a Canadian circular economy policy and research agenda
- The World Circular Economy Conference, to be held in Canada in 2020, where we will present on a national Circular Food Economy roadmap

Those efforts are already showing results. The Ellen MacArthur Foundation, a UK-based circular economy think tank, referred to our work in their "[Circular Food Economy and Cities](#)" report launched at the World Economic Forum in January 2019. In December 2018, Forbes Africa published an article about how communities in sub-Saharan Africa could adapt and replicate Guelph-Wellington's circular food economy model.

Thirdly, **our initiative is scalable**. The technologies and strategies we develop through Our Food Future can be applied well beyond the food system, allowing communities to deliver better services, reduce costs and trigger new business models supporting a data economy where data can be used in an open, transparent, profitable and fair manner. In this way, the initiative will have significant ongoing benefits to the entire community, with the potential for even broader application in other communities across Canada.

Fourthly, **our initiative is sustainable**. Because Smart Cities invest in themselves, we'll create a pipeline of revenue-generating projects and businesses through our Harve\$t Impact Fund.

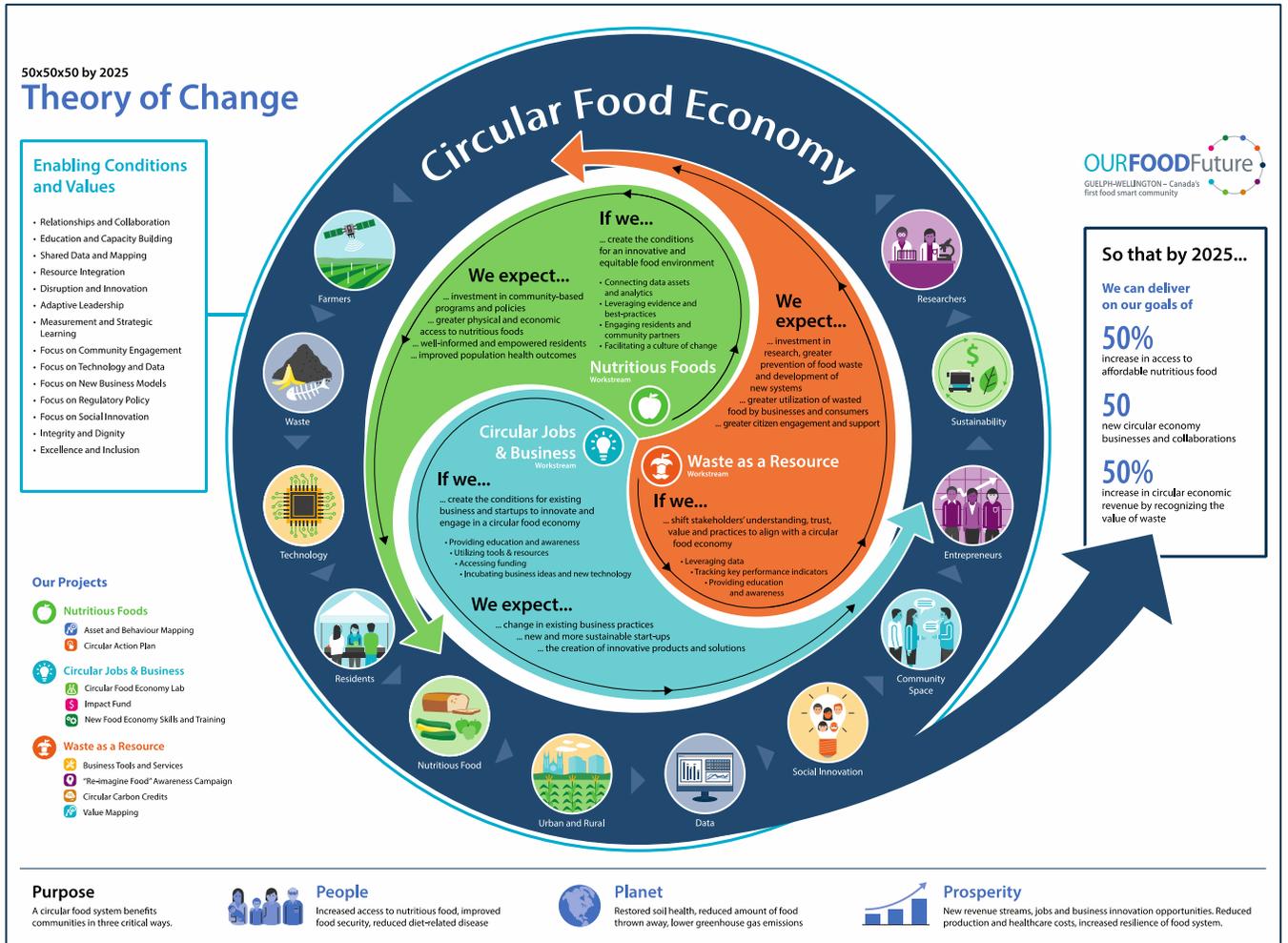
Finally, this initiative is truly **transformative**. We intend to leverage the \$10M prize not just to complete a series of projects but to create critically needed system-level change, first locally, then nationally and globally. Food is a basic necessity and is an integral component of our daily lives, touching on health, family, community and society. By reimagining the food system, we can reimagine the world: reduce our carbon footprint, use the planet's resources more sustainably, drive an inclusive green economy and create food security for a global population predicted to hit 9.1 billion by 2050.

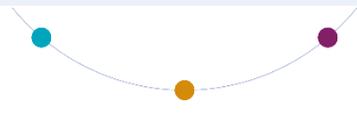
2.0 Performance Measurement

2.1 Measurement strategy

We have developed our performance measurement strategy through an inclusive process that engaged the 62 members of our steering committee and workstream tables in a [Theory of Change](#) process (Figure 2.1). This process ensured our partners felt the goals were valid and achievable and will create impact. Our theory of change connects the dots between our high-level strategies and the intended impact, illustrating the core hypotheses for each of the three workstreams. This theory of change will serve as our touch point for evaluation, providing the framework for testing assumptions and making course corrections.

Figure 2.1 Theory of Change



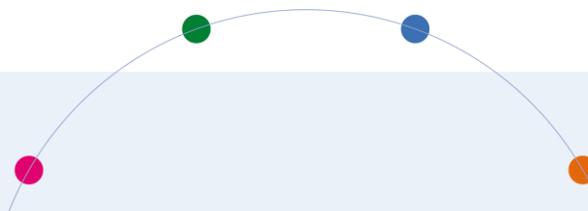


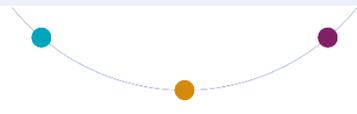
2.1.1 Outcomes-based performance measurement

Drilling down from the theory of change, Tables 2.1 to 2.5 present the immediate and intermediate outcomes for each of the 50x50x50 by 2025 impact goals, identifying high-level activity streams, outputs, indicators and methods. The tables reflect the shared outputs, outcomes and indicators across each of the workstreams, highlighting where activities will be mutually reinforcing and moving towards common impact goals.

Table 2.1 Smart Cities Office — immediate and intermediate outcomes

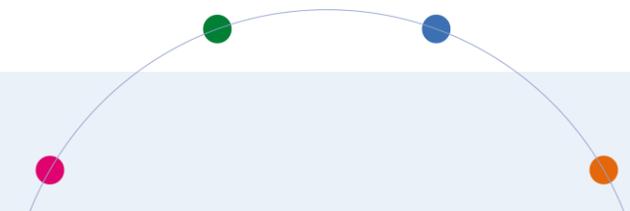
Activity Areas	Outputs	Immediate Outcomes	Intermediate Outcomes	Indicators	Methods (Data Sources)
Coordinating and capacity building across projects Coordinating M&E, knowledge mobilization	Network partners across sectors Tools and resources Reports & presentations	Increased awareness & engagement in Our Food Future Increased access to relevant resources and support	Stronger collaboration and shared leadership/ accountability Greater project capacity for effective delivery of activities and outputs Greater uptake and replication of circular economy approach	# and range of network partners % of partners to report positive experience of collaboration and shared leadership % of partners to report communications are valuable and informative	Output tracking (coordination activities) Partnership survey (project teams and partners) Network Map (Stakeholders)
Data governance framework and development of technology platforms	Data activities Needs analysis Concierge user platform Data collaboration platform	Increased access to relevant data Reduced barriers and challenges to data sharing	More robust technology ecosystem Greater data-driven design and collaboration	# of collaborators and contributors Engagement and usage of platforms Quality of user experience	Output tracking (activities, usual analytics) Experience surveys (platform users)





<p>Engaging residents and stakeholders</p>	<p>Digital tools & resources</p> <p>Reimagine food campaign</p> <p>Newcomer pilot</p> <p>Live events</p> <p>Social media activity</p> <p>Champions</p> <p>Behavioural interventions</p>	<p>Increased awareness of Our Food Future</p> <p>Increased buy-in for Our Food Future</p> <p>Stronger connections between diverse stakeholder groups</p> <p>Enhanced response to food needs of identified populations</p>	<p>Greater engagement and support for initiative and project activities</p> <p>Increased behaviours that promote Our Food Future and a circular food economy</p>	<p>Dissemination of project materials</p> <p># and diversity of residents reached</p> <p>Level of engagement across project activities</p> <p># of external presentations and publications</p> <p># to connect with and access program benefits</p> <p>% to report increase in awareness towards food and food waste</p>	<p>Output tracking (engagement activities)</p> <p>Social Media Analysis (platform analytics)</p> <p>Engagement survey (residents, stakeholder groups)</p>
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* SCO = Smart Cities Office



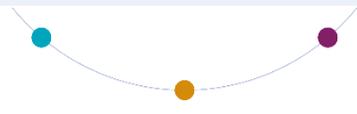


Table 2.2 Increased accessibility of affordable, nutritious food — immediate and intermediate outcomes

Activity Areas	Outputs	Immediate Outcomes	Intermediate Outcomes	Indicators	Methods (Data Sources)
Asset & behaviour mapping Creating a circular action plan	Food Asset Map Dashboard Reports App for tracking food accessibility and purchasing Food Security & Health Action Plan New interventions for increasing accessibility	Increased knowledge & insight of the local context, gaps and opportunities	Increased commitment and investment in interventions that address gaps and increase access to affordable, nutritious, local food	Dissemination of Asset Map and Action Plan # of partners & collaborations engaged in leading interventions New funding commitments Interventions launched	Output tracking (project activities)
Implementing & testing interventions	New access & distribution sites/channels	Increased access to local, nutritious, culturally appropriate foods	Increased purchasing/ consumption of local, nutritious, culturally appropriate foods Lower number of individuals/families experiencing food insecurity	# and diversity of families, children/youth engaged % increase in availability of healthy foods in public spaces Reported change in food behaviours	Output tracking (intervention & project activities) Time series (asset map; app users; County of Wellington/City of Guelph population data; food bank data, Public Health; program participants)

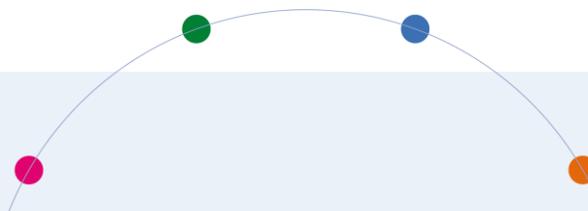
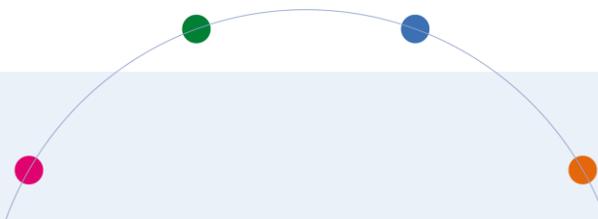




Table 2.3 New circular businesses and collaborations — immediate and intermediate outcomes

Activity Areas	Outputs	Immediate Outcomes	Intermediate Outcomes	Indicators	Methods (Data Sources)
Designing and implementing CFE iHub	Collision platform	Greater understanding and commitment to adopting circular business model	Increased capacity to adopt technology and use data to support circular business model	% of enterprises to report increased capacity and technology use	Output tracking (project activities; partners/investors)
Establishing Harve\$t Fund & platform	Funding platform	New opportunities and resources for seeding and growing circular businesses	Greater job opportunities	% of enterprises to report change in practice	Impact assessment – tbd through Harve\$t Fund planning process (funded businesses; business analytics)
Harve\$t Impact Fund	Data and new technologies	Greater skills and knowledge to support sustainability of circular economy	Increased revenue, social & environmental benefits from adopting circular business model/practices	% of enterprises to improve revenue and yield social and environmental benefits	Time Series Assessment (network members; business owners)
Demonstration Project	Circular Economy Curriculum	Increased availability of value-add products through social enterprises	Stronger and more sustainable local economy	% of enterprises to report growth (hiring, new products, new markets)	
Developing social enterprises	“Upcycle” commercial kitchen and processing facility	Reduced distance for delivery of food to the end user		% of product processed that would have otherwise been wasted	
Developing new food economy skills and training	The Food Waste Innovation Hub			% of youth employed	
Using iHub to develop and launch value-added products made from rescued food	Online food distribution platform: foodrescue.ca				
	Organic food				
	New value-added products				
	Feasibility study for a circular food economy graduate program at Conestoga College				



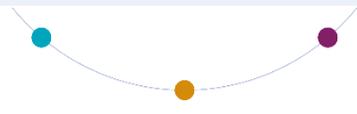
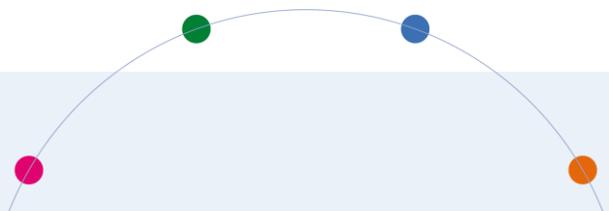


Table 2.4 Increase circular economic revenue — immediate and intermediate outcomes

Activity Areas	Outputs	Immediate Outcomes	Intermediate Outcomes	Indicators	Methods (Data Sources)
Providing CE business tools & services Developing IoT measurement & sensor technology Piloting carbon credits Value mapping	Integrated Solid Waste Management Master Plan Baseline data & benchmarks Tech prototypes Waste KPI Dashboard Food Waste Best Practice Review Policy paper Food Waste Opportunities Map	Greater understanding and awareness of food waste, including cost of waste Greater awareness of individual/business contribution to food waste New opportunities and buy-in for leveraging the reuse hierarchy	Increase in sustainable practices across sectors and general public Less food waste sent to landfill Increase in reuse/upcycling	% of stakeholders to report reduction food waste and associated cost savings % change in organic resource waste # to engage in carbon credit platform % of public to report decrease in amount of wasted food	Time series (audit data, County/City; waste composition study; resident survey; sector surveys; carbon credit pilot data, food loss waste protocol)



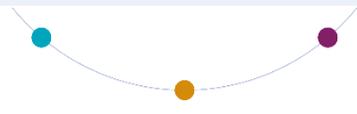
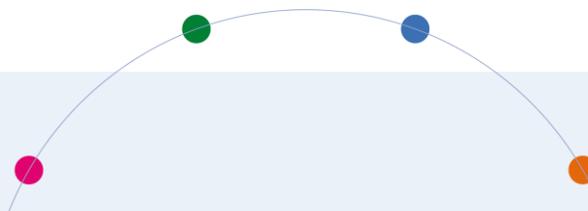


Table 2.5 Long-term outcomes

Workstream	Long-term Outcome	Indicators	Methods (Data Sources)
Nutritious Food	Increased accessibility of affordable, nutritious, local food	% change in # of neighborhoods without physical access to nutritious foods % change in affordability of healthy food % change in individuals and families to experience food insecurity	Time series assessment (food asset map; Food Bank data; County of Wellington/City of Guelph population data; Public Health; program participants)
Circular Economy	50 new circular economy businesses launched	Number of start-ups, businesses and collaborations to embed circular business model into operations	Time series assessment (iHub participants; business owners)
Circular Revenue	Increase in circular economic revenue*	Amount of revenue generated by social enterprise and businesses that connect to the 50x50x50 by 2015 impact goals % change in revenue attributed to adoption of circular technologies and practices across stakeholders Amount of cost savings attributed to reduction of food waste across sectors	Time series (assessments; business survey; County and City waste data; data from iHub and HarveSt fund)

*also connects to Circular Economy work stream and outcomes from impact goal 2: 50 New circular business and collaborations





2.2 Milestones

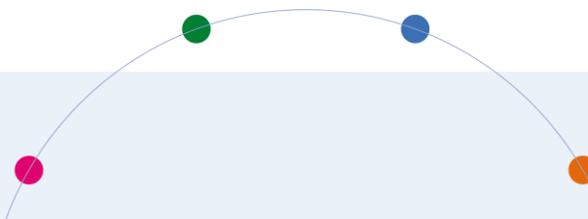
Tables 2.6–2.9 show the sequencing of high-level project milestones.

Table 2.6 Smart Cities Office milestones

Milestones	Timeframe
Data governance framework is finalized	Year 1
Technology platforms are launched	Year 1
Education campaign is launched and reaches targets	Annually
Newcomer pilot engages youth in farm apprenticeships	Per annual program cycle
Monitoring and Evaluation Reports are shared and used to make course corrections	Mid-year and annually

Table 2.7 Nutritious Foods milestones

Milestones	Timeframe
Asset & Behaviour Mapping	
Food Asset Map is disseminated	Years 1 - 2
App for tracking consumer behaviour is launched	Years 1 - 2
Dashboard Framework is launched and updated annually	Years 1 - 5
Food Security & Health Action Plan	
Action Plan is developed	Year 2
Interventions are designed & launched	Year 3 - 5
Formative evaluations on new interventions are completed	Years 3 - 5



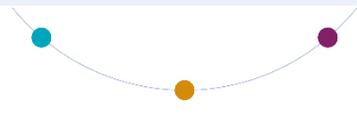
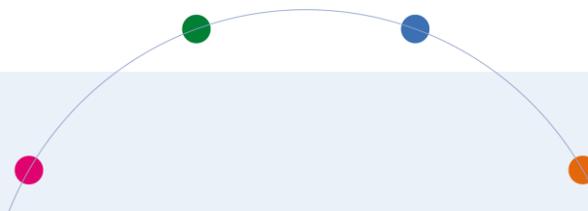


Table 2.8 Circular Businesses and Collaborations milestones

Milestones	Timeframe
iHub	
Platform is designed and launched	Year 1
Challenges engage entrepreneurs and are completed each year (10-20 teams/yr)	Annually
Businesses engaged with iHub gain capacity and adopt circular business model (10/yr)	Annually
Harve\$t Fund	
Platform designed & launched	Year 1
Financing/funding supports social enterprise and non-profits	Years 1 - 5
Impact Assessment is completed on social/economic/environmental benefit	Years 2 - 5
Harve\$t Impact Fund Demonstration Projects	
“Good Food” Project increases food distribution	Year 1
“Upcycle” Kitchen launched to develop value-add products	Year 1
Online food distribution centre launched to reduce wasted food and contribute to development of value-add products	Year 1
Food waste innovation Hub is launched	Year 2
New circular economy skills and training	
Feasibility Study on graduate program at Conestoga College is completed	Year 1
Evolution of U of G program for graduate students interested in the circular economy	Ongoing



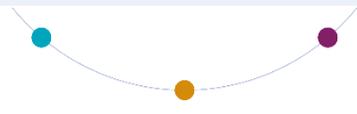
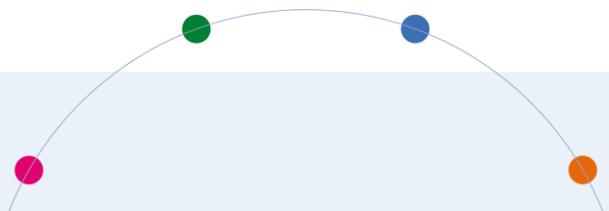


Table 2.9 Waste as Resource milestones

Milestones	Timeframe
Business tools & services	
Baseline data development for processing and manufacturing sector (5)	Year 1
Circular Carbon Credits	
Municipal carbon credit & social currency challenges pilot is launched	Year 1
Pilot CO2 aggregation framework for food and beverage processors	Years 1 - 5
Policy proposal for inclusion of prevention measures as quantifiable carbon off-set credits	Year 1
Circularity in Municipal Waste Systems	
Integrated Guelph and Wellington Solid Waste Management Master Plan	Year 1
Development and execution, and waste KPI dashboard	Year 1
Value stream mapping is completed and Opportunities Map is disseminated	Years 1 - 2
Promotion and education materials are developed	Years 1 - 2
IOT Sensor is prototyped and piloted	Years 2 - 5

2.3 Monitoring, evaluation and reporting plan

Outcomes-based performance measurement will be complemented by a **Developmental Evaluation** (DE) approach. Equipped with a DE learning orientation, Our Food Future leaders can then test the theory of change, adapt and make course corrections along the way. A DE approach will also support scaling and replication by sharing lessons learned and identifying what approaches, strategies and tools support success.





2.3.1 Roles

The Smart City Office (Chapter 5) will coordinate the Monitoring and Evaluation plan for the projects, including communications, data collection, and disseminating reports. A **Lead Evaluator** will be responsible for implementation of the evaluation, including design, leading the consolidation and analysis of data, reporting, and sense-making. A **Measurement Committee**, comprised of the lead evaluator plus four to five workstream members will support data collection and stakeholder engagement, provide guidance on troubleshooting challenges and help ensure data quality. Graduate students will also be engaged to carry out the analysis.

2.3.2 Methods

Measurement will include two levels of assessment: i) at the systems level to assess what it takes to activate a networked approach to complex systems change; and ii) at the project level to measure progress and outcomes. We will use a times-series design (year 1; year 3 and year 5) that triangulates data obtained through mixed methods. These methods will include:

- **Online Surveys (Ongoing)** tailored to specific stakeholder cohorts. Questions will assess process and outcome indicators.
- **Social Network Mapping (Years 1, 3 & 5)** that will capture the growing network of partners to assess the development of relationships across sectors, as well as strengths and weakness in the network.
- **Harve\$t Impact Assessment Findings (Years 2–5)**
- **Key Informant Interviews (Years 3 & 5)** with key network partners for assessing their experience, change in practice and the value of the initiative.
- **Secondary Analysis** of data collected through project activities, such as waste and business assessments and through project-level evaluation, as well as from other relevant sources such as Public Health, County and City sources, etc.
- **Social/Digital Media Analysis** of usage analytics, including followers, likes and shares, and a content analysis to assess reach and engagement more broadly.

2.4 Risks and mitigation

Because Our Food Future is a complex, systems-wide initiative with emergent strategies, the most likely risk to performance measurement is the number and diversity of projects and stakeholders. The breadth of the initiative means that there will need to be substantive attention to coordination and management of monitoring and evaluation timelines and data collection strategies. We will also need to ensure this data is managed appropriately. To ensure this, data management will tie into the standards and rigor developed by the Smart Cities Office's work in developing a technology platform, including its measures for data security.

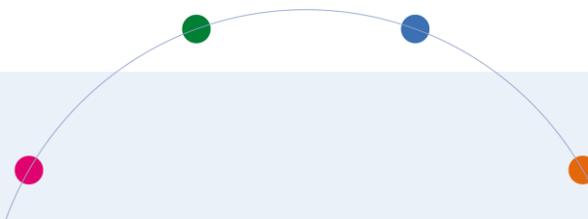
Measurement is a key component of Our Food Future not only to ensure activities are leading to outcomes but also to support learning, scaling and replication. Taking a DE approach will connect monitoring and evaluation findings right back into emergent strategy and design, which will be critical for evolving the initiative over five years (as broader social, political and economic contexts shift). DE will support course corrections and the achievement of real and substantive impact.



2.5 Monitoring and evaluation timelines

Table 2.10 Monitoring and Evaluation Timelines

	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q1	Q2	Q3	Q4																
Launch monitoring and evaluation plan and complete baseline assessment	█	█	█																	
Ongoing data collection across projects				█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
DE briefs			█		█		█		█		█		█		█		█			
Network map										█								█		
Key informant interviews										█								█		
Yearly reports								█				█				█				
Sense-making to adapt, identify emerging opportunities and course correct as needed					█				█				█				█			
Final report																				█





3.0 Project Management

Our Project Management Plan leverages the strengths of our partners and our own internal resources. This includes the City of Guelph’s Project Management Office (PMO). The PMO is a Centre of Excellence for project and process management, providing coordinated management, best practices, research, tools and training for the City to successfully execute projects and improve services and processes.

The PMO enables organizational success through the efficient and effective management of processes and projects. This is accomplished by:

- Defining, developing and maintaining standard methodologies, processes and tools
- Providing training, coaching and guidance on process and project management
- Providing centralized, coordinated management and oversight of project delivery and service delivery/performance

Our Smart Cities Project Team, with support from the PMO, will ensure successful execution of our project management plan (Chapter 5). This includes ongoing operations and resource management, as well as addressing concerns about budgets, workforce capacity and infrastructure readiness. Because of the nature of our partnership, the City of Guelph and the County of Wellington will equally share resources (IT, finance, waste resources, etc.) to ensure the timely delivery of our projects.

Through various meetings with our stakeholders’ groups, consultants and internal staff, we have developed five-year plans that reflect our project goals (Chapter 2).

3.1 Scope, scheduling, resource requirements and stakeholders by project

Our Food Future is a system-level change initiative, with nine Pathfinder Projects integrated into three Workstreams and enabled by data, technology and engagement strategies. A Smart City Office (Chapter 5) will serve as the locus of control and coordinating body for implementation. The initiative is supported by an open, collaborative governance framework which engages the local community and collaborators as leaders, expert advisors and delivery partners.

As is described in Chapter 5, the City and County will provide oversight and coordination of Our Food Future. The following tables identify the scope, deliverables, resource requirements and key stakeholders for each project. Refer to Chapter 2 for the identification of project outcomes.

Note: Financials listed in the “Resource Requirements” column capture those noted in the proposal budget, including financial totals pending, in-kind and cost amounts (Chapter 8).

3.1.1 Smart Cities Office

Table 3.1 Smart Cities Office

Projects & Scope	Timeline/Key Deliverables	Resource Requirements*	Key Stakeholders
<p>Technology and Data Strategy to develop a scalable data and technology ecosystem</p>	<p>2020</p> <ul style="list-style-type: none"> • Data and privacy framework <p>2020 to 2025</p> <ul style="list-style-type: none"> • Business requirements analysis • Concierge, Data Collaboration, & Rural Broadband Platforms • Project Level Technology Development, Challenges & Pilots • Launch the Data Collaboration Platform • Network maturity • Share best practices 	<p>Financial: \$1.2M</p> <p>Human:</p> <ul style="list-style-type: none"> • Smart City Office & Project Staff • Consultants <p>Material: Hardware & software</p>	<ul style="list-style-type: none"> • University of Guelph • Data/Tech consultant • Public Health • Toward Common Ground • University of Guelph
<p>Engagement Strategy: engage stakeholders and residents in seeing a role for themselves in the initiative</p>	<p>2020 to 2025</p> <ul style="list-style-type: none"> • Public Education materials • Digital tools & resources • Live events • Behavioural interventions • Newcomer Pilot: Farm Apprenticeship Program • Reimagine Food Campaign 	<p>Financial: \$1.3M</p> <ul style="list-style-type: none"> • Human Resources: • Engagement Outreach Staff • Engagement Tactics Implementation Staff • Consulting <p>Material: IT equipment; software; supplies</p>	<ul style="list-style-type: none"> • University of Guelph/ Newcomer Pilot: Guelph Centre for Urban Organic Farming • Shelldale Community Centre • Willow Road public school • The SEED • Wellington Catholic District School Board; Upper Grand District School Board • YMCA/YWCA • Indigenous partners and leaders



3.1.2 Goal 1: Increasing access to affordable, nutritious, local food by 50%

Asset and Behaviour Mapping: This project will involve on-the-ground research, surveying, GIS mapping and the results of Guelph Family Health’s study on the food environment, to identify local food assets and behaviours related to food purchases and consumption. The data gathered will support the development an internet-based Dashboard. The Dashboard will provide access to baseline data regarding of the state of access to nutritious food and community assets. Data mapping and analysis of multiple datasets will identify access gaps, enabling us to establish targets, develop highly effective strategies and track these strategies across time. We will then use this information as an evaluation or benchmarking tool.

Table 3.2 Asset and Behaviour Mapping

Timeline/Key Deliverables	Resource Requirements	Key Stakeholders
<p>2020 to 2021</p> <ul style="list-style-type: none"> • Asset & Behaviour Map • Dashboard 	<p>Financial: \$2.2M</p> <p>Human:</p> <ul style="list-style-type: none"> • Health Promotion Specialist • Public Health Nutritionist • Health Data Analyst • Epidemiologist/Data Scientist • Environmental Health Specialist • Food Environments Researcher • Nutrition Researcher • Applied Public Health Research Scientist • Undergraduate/graduate students • Consultant/Facilitator • Community Liaison • Communications Team • Data/Technology Team <p>Material: hardware & software; technology development</p>	<ul style="list-style-type: none"> • University of Guelph • Wellington-Dufferin-Guelph Public Health • Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) • Guelph Community Health Centre • Wellington Catholic District School Board • Guelph Neighbourhood Support Coalition





Circular Food Security & Health Action Plan: Informed by insights gathered by the Asset and Behaviour Mapping project, a Food Security and Health Action Plan will be developed to establish new intervention models and evidence-based policies and resource allocation decisions. Interventions will help influence behaviours related to food purchases and consumption, as well as attract the agri-food industry, community partners and businesses to areas with insufficient access to healthy nutritious and affordable food assets. The results will be effective investments in community-based programs and policies; greater physical and economic access to nutritious foods; well-informed and empowered residents; and, ultimately, improved population health outcomes.

Table 3.3 Circular Food Security & Health Action Plan

Timeline/Key Deliverables	Resource Requirements	Key Stakeholders
2021 to 2024 <ul style="list-style-type: none">• Action Plan• New Interventions piloted and scaled	Same as Table 3.2	Same as Table 3.2





3.1.3 Goal 2: Create 50 new circular business collaborations and opportunities

Circular Food Economy Innovation Hub (CFE iHub): This “think and do” iHub will be a circular economy innovation engine for the region, helping entrepreneurs come together to tackle our most complex food challenges. It will serve as a hub for discovery, assessment and analysis of problems; ideation, user-design, prototyping and validation of solutions; and ongoing mentoring and acceleration of new circular food economy entities. It will create partnerships and collaborations to re-invent local food systems and solve local food problems that are globally relevant. Anchoring the project will be the establishment and operation of collision activities that foster collaboration in the agri-tech, clean-tech, social innovation and other sectors that may contribute to our goals.

Table 3.4 Circular Food Economy Innovation Hub

Timeline/Key Deliverables	Resource Requirements	Key Stakeholders
<p>2020</p> <ul style="list-style-type: none"> • Feasibility study • Design & launch <p>2021 to 2024</p> <ul style="list-style-type: none"> • Collision events • Hackathons/design jams • Prototypes, including new technologies • New circular economy enterprises 	<p>Financial: \$3.2M</p> <p>Human:</p> <ul style="list-style-type: none"> • Head, CFE Lab • CFE Innovation Specialist • Client Engagement Lead • Design Lead • Digital/Events Coordinator • Connectors/Concierge • Main door intake support • Additional Innovation Specialist • Financial & Operations Support <p>Material: Maker Space; design/operations; hardware & software</p>	<ul style="list-style-type: none"> • 10C Shared Space • Innovation Guelph • University of Guelph – John F. Wood Centre for Business and Student Enterprise • Guelph Chamber of Commerce • Business Centre of Guelph/Wellington • Conestoga College

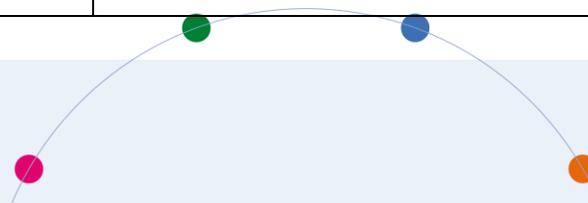




The Harve\$T Impact Fund: This expanded and connected local financial marketplace leverages granted funds to “de-risk” projects and grows institutional and venture capital opportunities. This circular fund and finance ecosystem will ensure that a variety of types of businesses develop, social goals are supported and successes are expanded upon. The Fund will enable new partnerships, support start-ups and facilitate innovations that apply circular ideas, data and technology to food problems. Beyond the initial nine Pathfinder Projects, the [Harve\\$T Impact Fund](#) will enable the sustainability of the Our Food Future initiative by supporting a pipeline of innovative data- and technology-driven businesses and collaborations.

Table 3.5 Harve\$T Impact Fund

Timeline/Key Deliverables	Resource Requirements	Key Stakeholders
<p>2020</p> <ul style="list-style-type: none"> • Funding and financing platform • Impact assessment <p>2021 to 2024</p> <ul style="list-style-type: none"> • Smart Cities Start-up Fund • Start-up capital • Direct community investment and social finance • Social Venture Exchange (SVX) • Social Impact Bond (SIB) • Institutional debt financing • Venture capital • Philanthropic donations, grants and awards 	<p>Financial: \$3.5M</p> <p>Human:</p> <ul style="list-style-type: none"> • Harve\$T Fund CFE Leader • CFE Financial Analyst • CFE Social Finance Engagement Lead • Impact Measurement Lead • Philanthropy Development Lead • Development Assistant (Year 2-5) • Partnership Development Lead • Financial, Operations, Marketing & Legal support • Consultants <p>Material: Hardware & software</p>	<ul style="list-style-type: none"> • 10C Shared Space • Innovation Guelph • University of Guelph – John F. Wood Centre for Business and Student Enterprise • Guelph Chamber of Commerce • Business Centre of Guelph/Wellington • Business leaders • Entrepreneurs • Investors
<p>Harve\$T Impact Fund: Demonstration Project</p> <p>2020 to 2024</p> <ul style="list-style-type: none"> • Fresh food produced and delivered to Wellington County residents • “Upcycle commercial kitchen/processing facility • Food Waste Innovation Hub 	<p>Financial: \$360,000</p> <p>Human:</p> <ul style="list-style-type: none"> • Community Liaison • Food Access Program Coordinator 	<ul style="list-style-type: none"> • The SEED • Guelph Community Health Centre • Everdale • St. Joseph’s Health Centre • Second Harvest • University of Guelph





Timeline/Key Deliverables	Resource Requirements	Key Stakeholders
<ul style="list-style-type: none"> Online food distribution platform: foodrescue.ca 		

New Food Economy Skills and Training: Leveraging the institutional resources, skills and talent in our community, we will provide food innovation education and training, as well as public learning labs to promote and innovate on food policy and ideas. This includes expanding existing sustainable food education programs in elementary and high schools, such as the Centre Wellington Food School. Meanwhile, the University of Guelph will evolve its “Food from Thought” program with the Arrell Food Institute, which will see graduate students undertaking real-world challenge projects related to food security and/or agriculture. Finally, the Smart Cities Challenge initiative provides new opportunities for Conestoga College’s Institute of Food Processing Technology to deliver more education, training and research in food processing technologies, food safety, automation and robotics, packaging and plant supervision. Together, these organizations are committed to delivering the training and mentoring side of Our Food Future.

Table 3.6 New Food Economy Skills & Training

Timeline/Key Deliverables	Resource Requirements	Key Stakeholders
<p>2020 to 2024</p> <ul style="list-style-type: none"> Training and mentoring programs Post-secondary courses & educational experiences related to the circular food economy Secondary school students engaged through the Local Environmental Agriculture and Food (LEAF) Program & Centre Wellington Food School 	<p>Financial: These initiatives will be delivered by the applicable institutions as “in kind” contributions</p> <p>Human:</p> <ul style="list-style-type: none"> Program staff Faculty 	<ul style="list-style-type: none"> University of Guelph Conestoga College -Craig Richardson Institute of Food Processing Technology Arrell Food Institute Food from Thought initiative Norwell District Secondary School Centre Wellington District High School





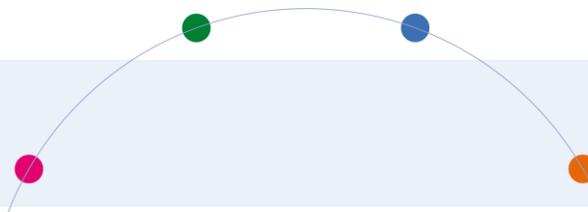
3.1.4 Goal 3: Increasing circular economic revenues by 50% by valuing waste as resource

Business Tools and Services: This project will develop, curate and share a suite of tools, business diagnostics and services to help public organizations and businesses reinvent their processes and business models. This includes developing baseline data, measurement technologies to support evidence-based interventions and decision making that increase sustainability and circular principles.

Table 3.7 Business Tools & Services

Timeline/Key Deliverables	Resource Requirements	Key Stakeholders
<p>2020 to 2021</p> <ul style="list-style-type: none"> • Business assessments • Baseline data • Waste composition study • KPI dashboard • Tech prototypes <p>2021 to 2024</p> <ul style="list-style-type: none"> • Assessments • Geospatial mapping • Prototype testing and iteration 	<p>Financial: \$375,000</p> <p>Human:</p> <ul style="list-style-type: none"> • County of Wellington Consultant Support • University of Guelph Masters Students • Research leads 	<ul style="list-style-type: none"> • Provision Coalition • University of Guelph • County and City waste resource departments • Guelph Waste Resource Innovation Centre • Business owners

“Reimagine Food” Awareness Campaign: This project will focus on educating consumers on the importance of revaluing waste. As a result, it will boost demand for the products of a circular economy and build stronger relationships between local food producers and consumers to enable the regional food ecosystem. (See Table 3.1 and Chapter 6 for more details.)





Circular Carbon Credits: Leveraging carbon credits generated by the management of landfill emissions and source-separated-organics composting, this project seeks to increase the circularity of municipal carbon credits by adding the concept of a social currency or token system similar to loyalty points. It is envisioned that a platform can be created whereby carbon-credit-backed social currency utilizing distributed ledger technology or equivalent can be traded at the local level to increase awareness and incentivize local and sustainable consumer food choices. This project will also develop a protocol system and policy framework for enabling carbon credits for food waste prevention at food and beverage manufacturing sites.

Table 3.8 Circular Carbon Credits

Timeline/Key Deliverables	Resource Requirements	Key Stakeholders
<p>2020</p> <ul style="list-style-type: none">• Municipal Waste Carbon Credits Pilot designed• Pilot CO2e aggregation approach across processing sector <p>2021 to 2024</p> <ul style="list-style-type: none">• Policy proposal to reflect prevention as carbon-offset eligible• Municipal Waste Carbon Credits Pilot launched – carbon credits issued• Social currency framework developed	<p>Financial: \$590,000</p> <p>Human:</p> <ul style="list-style-type: none">• Provision Coalition staff	<ul style="list-style-type: none">• Provision Coalition• Food and beverage processors





Circularity in Municipal Waste Systems: This project leverages municipal waste systems and partnerships to reduce waste and loss along the food value chain and increase circularity. Integrated urban and rural waste management plans will support innovation by identifying opportunities to maximize diversion of food waste and organics from landfill. Leveraging Guelph’s automated and integrated collection technology, including waste cart RFID and GPS technology, will advance new AI-driven technologies, waste-sorting sensors and smartphone apps that help households reduce avoidable waste. Value mapping will help visualize food production processes from start to finish, from raw inputs to the final consumer, identifying opportunities to recover the economic and environmental value of “waste” byproducts.

Table 3.9 Circular Municipal Waste Systems

Timeline/Key Deliverables	Resource Requirements	Key Stakeholders
<p>2020</p> <ul style="list-style-type: none"> • Integrated Master Plan <p>2021-2024</p> <ul style="list-style-type: none"> • Master Plan reporting • Waste KPI dashboard development • Municipal Food Waste Reduction Best Practice Review • IoT measurement and sensor technology • “Orange button” for Waste Value Stream Mapping Process • Visualization Tools • Food Waste Prevention Protocol 	<p>Financial: \$2.4M</p> <p>Human:</p> <ul style="list-style-type: none"> • City and County Waste Resource staff 	<ul style="list-style-type: none"> • University of Guelph • Provision Coalition





3.2 Project management methodology and communication

The City and County will deploy an agile methodology to complete this project. This will allow us to test pilots and prototypes to get a better understanding of how products will be used in the field and refine them accordingly.

We will make full use of feasibility studies, workshops and user groups to test and pilot ideas before making full commitments, thereby ensuring our community partners and stakeholders are engaged every step of the way. Throughout this project and moving forward beyond the lifecycle of the challenge, we will communicate widely and listen to the response we get from stakeholders and the community to identify residual risks and strategies to engage more effectively.

3.3 Procurement management

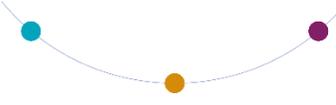
The procurement process will be managed according to the City of Guelph's well-established procurement policies and procedures. These adhere to very specific guiding principles that promote fairness, transparency, accountability, competitive bidding, environmental sustainability, accessibility, ethics and fair trade, as well as remove any conflicts of interest. This will allow for various forms of procurement from a broad suite of highly vetted vendors. (Chapter 4 for details specific to procuring technology.)

As noted previously, we intend to also make use of “problem-based procurement” or “challenge-based procurement” approaches where procurers outline the challenges and the needs (rather than prescribing a solution) and invite bidders to propose a variety of innovative solutions. This is a guiding principle in the [Guelph Civic Accelerator](#), as well as programs such as the federal [Innovative Solutions](#) program. Other approaches centered on problem-based procurement include [Code with Us](#) and [Sprint with Us](#) by the Government of British Columbia, the [CivTech](#) program in Scotland, the [Digital Fredericton initiative](#) in New Brunswick and the [Startup In Residence \(STIR\)](#) model launched by the Office of the Mayor in San Francisco (which has also been adopted in jurisdictions including British Columbia and Amsterdam). For further information, see the report the City of Guelph co-developed with the Brookfield Institute: [What's in the Mix: Opportunities + challenges for municipal innovation procurement](#).

3.4 Risk and issue management

Guelph-Wellington will draw on our depth of experience in issue management at the municipal level. We will use our internal issue management framework, which includes a risk-rating criteria/risk-impact likelihood matrix to assess risk and define the level of risk. This tool considers the category of probability against the category of consequence severity. A formal risk assessment will also be conducted using our Project Risk Assessment Toolkit. Because of the complexity of Our Food Future, a cross-functional team comprised of subject matter experts will be brought together to prepare the risk assessment and the mitigation plan.

We will also draw on our depth of experience in issue management. Our well-established issue management framework supports the organization in its effective anticipation, management and resolution of issues. It supports Guelph's culture of reputation and relationship management, and it helps to ensure our actions are aligned with stakeholder expectations.



3.5 Monitoring, controlling and reporting strategies

The City of Guelph uses a three-tier classification system to determine the level of project management rigour that should be applied. Tier 1 projects require the highest level of oversight and have direct support from the City’s Project Management Office. Given the complexity of Our Food Future, it will be treated as a Tier 1 project. Every Tier 1 project follows a stage-gate approach that includes budget planning (preinitiation), initiation, planning, execution (with monitoring/controlling) and close-out. The stage-gate framework is used to manage projects and allows the project steering committee to determine if a project is ready to proceed to the next gate.

The stage-gate framework also identifies gate-specific activities and deliverables to properly prepare for the next stage or phase of a project. At the end of each gate (i.e., gate-exit), specific deliverables are reviewed and approved. Once the deliverables are approved, the phase is complete and the project team can pass through the “gate” to the next stage.

The monitoring and controlling activities are completed as per the Project Management Plan (in particular, cost, schedule, risks and change log). Throughout the process, a Lessons Learned Log is maintained and the project costs are tracked on a monthly basis, ensuring the actuals compare with estimates. Where required, corrective action is taken to ensure the project comes in on the estimate. The actual project progress is compared with the baseline schedule, and resources are adjusted to ensure project progress and milestones track in accordance with the baseline. Project risks and issues are also tracked on a monthly basis, and the project management team will endeavour to manage all outstanding issues quickly. Change orders are logged in the Change Order Log at the time of issuance, and a status update is provided to the Project Sponsor on a monthly basis.

3.6 Approach to sustaining projects beyond the lifecycle of the Challenge

Sustainability is a cornerstone of circular food systems. Thus, we envision Our Food Future will continue — and grow — well beyond the five years of funding that INFC will provide if our proposal is successful.

Our Pathfinder project plans and budgets are based on the premise each project will become self-sustaining by year five of the Smart Cities Challenge. The Harve\$t Fund, for example, is a revolving fund, making it inherently self-sustainable. Meanwhile, the premise of iHub is to help launch revenue-generating businesses, and our Circular Municipal Waste Systems project will also lead to revenue-generating opportunities and/or cost savings. In other cases, such as our New Food Economy Skills and Training project, our project partners will assume responsibility for funding and running these projects.



4.0 Technology

4.1 Overview and strategy

We plan to build the technology platform for Our Food Future in two phases. In phase one, we will establish a technology ecosystem that will enable the development of smart solutions by:

- Understanding what data is available and what needs to be collected
- Breaking down data silos
- Increasing broadband internet access in Wellington County
- Making the Internet of Things (IoT) simpler
- Transforming big data into knowledge
- Unleashing the potential of right-time open data
- Ensuring data sovereignty
- Enabling the data economy

Over the longer term, we aim to use the tools, processes and services developed for Our Food Future in other sectors, since their structure and capabilities will not be limited to food-specific applications. This initiative will thus have significant ongoing benefits to the Guelph-Wellington community, with potential for even broader application across Canada.

Smart City initiatives tend to be focused on the use of connected technology, but in their fullest expression, they are about the procurement and onboarding of data- and technology-driven innovation. As such, the technology strategy for our initiative will focus on utilizing and evolving the work undertaken by the City of Guelph and others on innovation procurement.

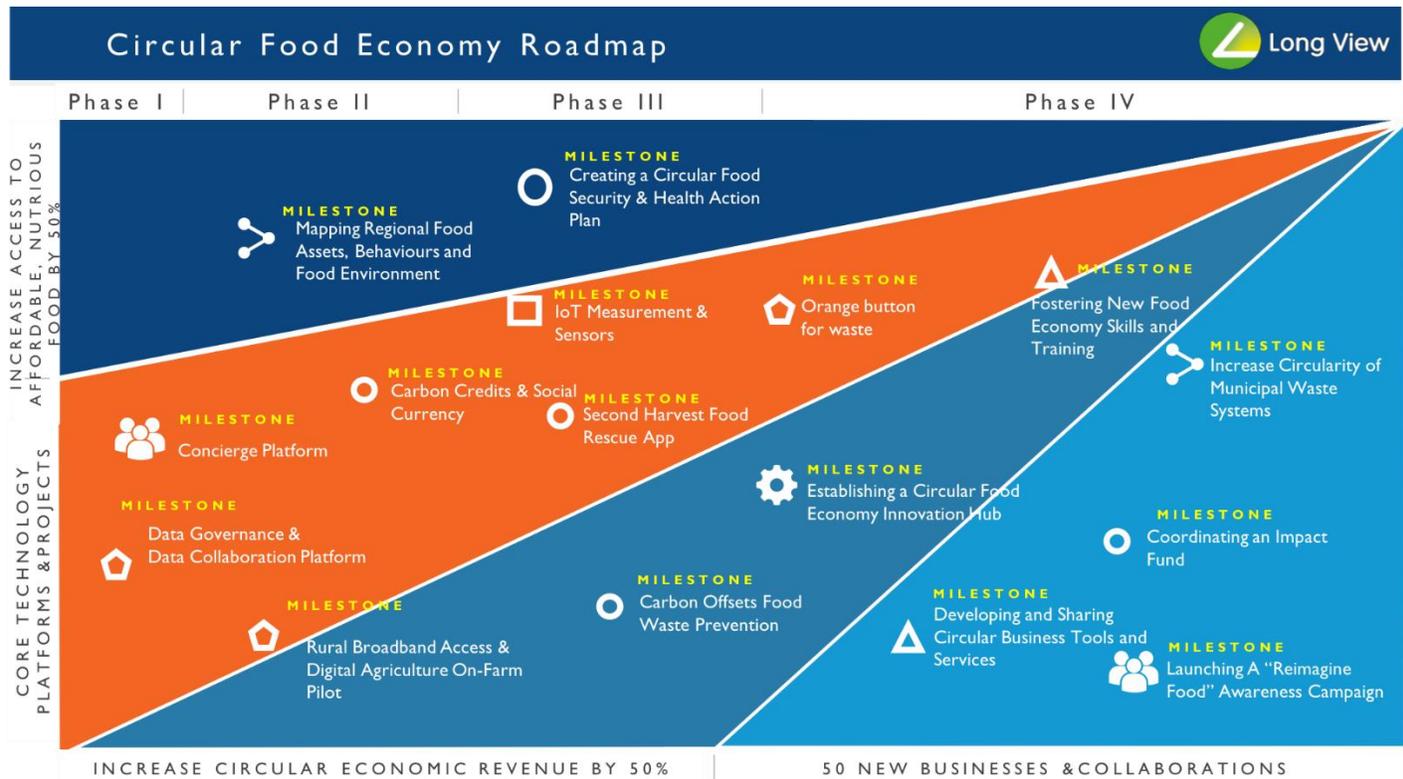
Each of our projects will use a “problem-based” challenge approach to procurement where appropriate. This approach involves the identification of problems and needs, preparing public challenges that describe these needs (rather than prescribing a solution) and then inviting the private sector to propose a variety of innovative solutions. This process has been developed and refined through the City of Guelph’s [Civic Accelerator](#) — an innovative approach to redesigning municipal procurement, providing better services to residents and creating more commercialization opportunities for early-stage businesses.

We will leverage and utilize the [Municipal Innovation Exchange](#) (the MIX) and its work on innovation procurement. The MIX is an emerging virtual centre of excellence developed by the Cities of [Guelph](#), [London](#) and [Barrie](#), as well as [MaRS Discovery District](#). The MIX is working to run innovation procurement challenges in each city, explore multi-city procurement challenges, conduct policy research, develop a peer-network of municipalities and codify learnings into a best practice Municipal Innovation Procurement Framework.

4.2 Preliminary roadmap

The roadmap we have developed (Figure 4.1) provides a preliminary view of how the core platforms, the application-specific technologies and the nine projects will be strategically deployed in phases. We discuss the details in the sections that follow.

Figure 4.1: Circular Food Economy Roadmap



4.3 Details about the technologies

Core platforms:

- A Concierge Platform, which serves as the primary user interface for this initiative
- A Data Collaboration Platform that enables access, sharing, manipulation and reporting against multiple data streams from multiple, disparate data sources (see Data Utility, Chapter 7)
- Rural broadband access

Project-specific technology innovation:

- Machine-learning tools (AI)
- Social currency & distributed ledger (for example, Blockchain)
- GIS mapping

4.4 Core platforms

4.4.1 Concierge

The Concierge platform will be the primary user interface for the Circular Food Economy initiative, facilitating the creation, validation and monitoring of circular food economy businesses, social enterprises and collaborations. It will serve as the digital hub for collaborators in agri-food, clean tech, social innovation and other sectors to work together on Circular Food Economy challenges.



Effective communication and collaboration (synchronous and asynchronous) are crucial when many different people at different sites will be working on the same interconnected projects. Some of the key capabilities of this platform will include:

- Asynchronous collaboration that enables:
 - User-to-user collaboration
 - Group-to-group collaboration
 - Ad-hoc and structured collaboration
 - Threaded discussions
 - Seamless access for internal and external collaborators
- Tie-ins to primary social networks (Facebook, Twitter, etc.) and access to analytics
- Resource management
 - Coordination of distributed teams
 - Skillset mapping, tracking and matching

Careful design of the access and directory structure will allow for a dynamic user environment without introducing potential security concerns.

There are several platforms available that could form a strong foundation for this service. Prior to moving to procurement, we will perform a business/project needs analysis to gather the specific user-interface requirements and develop a more detailed scope of engagement and deployment strategy.

4.4.2 Data Collaboration Platform

Data collaboration, enabled by the Data Utility (Chapter 7), is the heart of the nine Our Food Future projects. But the potential applications go even further.

A Data Collaboration Platform enables interconnections between data providers and data consumers through standardized, open protocols. It does not copy data to a central location; the data will always remain within the control of the data provider. Instead, it allows data users to transparently access data according to permissions they are granted by the data providers.

The Data Collaboration Platform will help break down data silos by addressing data-sharing challenges many organizations and stakeholders experience in Guelph-Wellington (e.g., farmers, food processors, government, equipment companies, public health units, food banks, etc.). Although these groups recognize the value of sharing data, this currently occurs through unique, ad hoc arrangements and links between each organization. This is not very scalable or manageable, as changes at either end of a link often mean significant effort is required to re-establish data-sharing connections.

An example of this approach could include partnerships between the local farming community, our research partners/innovators and our local source water protection agency.

Farmers today have precision control equipment with access to vast amounts of on field data. For example, they use data from prior years to limit seed planting and pesticide use in areas where standing water and/or water runoff result in poor crop yields.

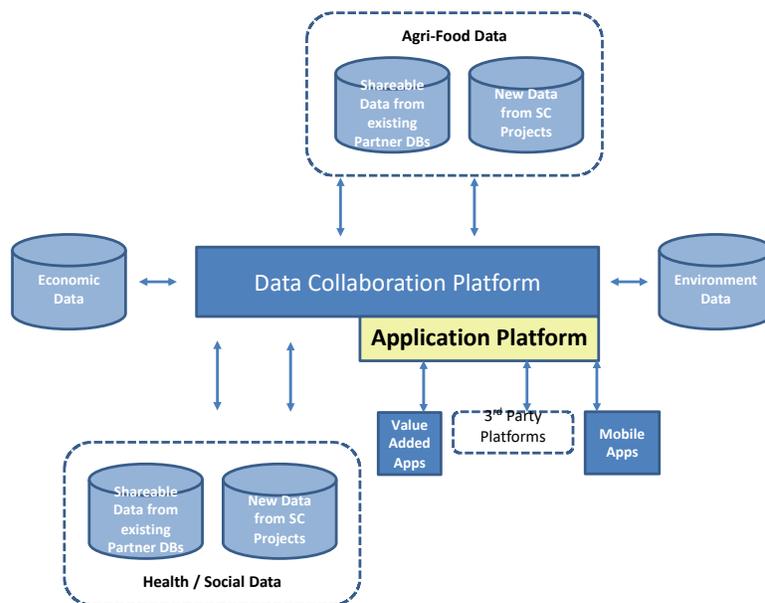
By developing a technology platform that enables the sharing of this data, we have an opportunity to create challenge statements to improve land usage in these areas. For example, we could test new soils that are more resistant to runoff or non-traditional crops that are more resilient in standing water. Alternatively, we could develop programs to repurpose these areas for environmental renewal. Another example could include the sharing of real-time pesticide data, local weather data, and water quality sensors. This would enable us to identify the example local impact of on-farm pesticide use in Wellington County. By sharing this data across multiple entities, we could identify the specific impact on each of our waterways. This would enable us to challenge the community to design solutions for the specific fields known to be problematic.

Some of the capabilities of this platform will be:

- Live, secure access to any data source
 - Data owners can control what data is exposed and grant or revoke access
 - Data users have access to all data sources through a standard Application Programming Interface (API)
- An integrated Application Platform, where community collaborators can develop and share value-added tools, solutions and applications
 - Capability to host and execute applications
 - Tools and modules to enable native analysis and reporting

Figure 4.2: Data Collaboration Platform

(SC = Smart Cities; DB = database)





Preliminary Review of FIWARE as a candidate for the Data Collaboration Platform

For the purposes of this proposal, we have identified FIWARE as a possible platform that meets the data-collaboration needs of Our Food Future. Moving forward, Guelph-Wellington will perform a business/project needs analysis to assess specific data-collaboration requirements. We will then conduct a rigorous procurement process, where we will validate the selection of FIWARE or another technology solution.

FIWARE is a global, open-source community where developers contribute data from Internet of Things (IoT) devices and other software applications. The platform then aggregates and processes that data to accelerate the development of smart solutions for cities, industry and farms. It provides the de-facto standard for context information management, as well as a library of tools based on that standard to develop smart solutions faster, more easily and more cheaply.

The open-standard nature of the FIWARE interface offers programmers the ability to port their applications across different platforms, eliminating the threat of vendor lock-in.

A rich suite of complementary open-standard components can be added to serve different functions:

- **Interfacing with the Internet of Things (IoT):** Capturing updates on context information from robots and third-party systems and translating required actuations.
- **Context data/API management, publication and monetization:** Implementing the expected smart behaviour of applications and/or assisting end users in making smart decisions.
- **Processing, analysis and visualization of context information:** Bringing support to usage control and the opportunity to publish and monetize part of managed context data.

FIWARE proof of concept: Canadian Agri-Food Sector

In 2017, Canadian Precision Agri-Food installed a FIWARE node in Canada on a Canadian-hosted cloud for evaluation using agri-food pilot projects. This test proved FIWARE performed tasks succinctly as a data broker, providing smooth and verifiable exchange. FIWARE also scored highly in efficiency, data standards, data retrieval, learning resources and documentation, as well as community resources and engagement.

4.4.3 Rural Broadband Access

As the Wellington Federation of Agriculture's recent survey revealed, the majority of local producers are already actively using technology such as sensors, auto-steer, GPS and video. However, smart technologies like these require reliable data transfer and connectivity. Currently, 57 per cent of households, farms and businesses surveyed within Wellington County are underserved when it comes to internet access, with download speeds less than 50 Mbps and upload speeds less than 10 Mbps.

Wellington County is addressing this through participation in the [Southwestern Integrated Fibre Technology \(SWIFT\)](#) network, which aims to build a high-speed fibre optic network across Southwestern Ontario. Wellington County is currently one of the first to start building SWIFT



into their network. This infrastructural upgrade, occurring alongside our Smart City Initiative, will give County residents greater access to reliable high-speed internet to be able to participate in data- and technology-related Our Food Future projects, including the data collaboration platform. It will also allow the County to reach their residents and agricultural producers more efficiently, thus creating more meaningful connections or dialogues about current affairs.

To enable broadband infrastructure on the farm in support of digital agriculture applications, we will conduct a pilot project in the County to test the viability of bulk-purchasing high-speed internet connectivity through a reliable provider. This project, to be activated in the early stages of Our Food Future, will lay the groundwork to enable our farmers and rural residents to actively participate in the circular food economy.

4.5 Project-level technologies

4.5.1 Machine learning tools (artificial intelligence) and data analytics

Machine learning (AI) can extract patterns and trends from large volumes of data without requiring significant human interaction. Some of the applications of this approach in the nine Our Food Future projects include image processing and recognition, data correlation and trend analysis.

For example, Guelph already has GPS technology and RFID tags installed in its household waste bins. This allows the City to collect real-time data on waste, recycling and organics that can be tracked back to a residential address or neighbourhood. Currently, however, we would need to conduct manual audits of household organic waste to collect further data on food waste and provide feedback to residents. Our “Circularity in Municipal Waste Systems” project (Project 9) will allow us to leverage our connected technology to further generate targeted geospatial data and support development of additional AI-driven sensor-based technology, such as sensor-based waste sorting.

We plan to develop an “**Orange Button**” standard and smartphone app for household waste data, similar to the [Green Button](#) standard and application that gives households access to their personal energy usage data. By integrating this new sensor technology, we could generate and send customized reports to homeowners’ smartphones. Available in multiple languages and formats, these reports would outline the household’s waste patterns and provide practical suggestions on how to reduce their avoidable waste, costs and carbon footprint.

There are numerous AI platforms and tools available in this space, many of which have been developed in Canada. However, some of this work will involve developing and integrating new technology and processes. Selection of a specific platform or tool will be driven by specific project and business needs, as well as the ability to integrate with the other components of the Our Food Future technology ecosystem.

4.5.2 Social currency and distributed ledger technology

Our “Increasing Circularity of Carbon Credits” project (Project 8) seeks to enhance the value of existing carbon offset programs. In addition to carbon offset credits, businesses would also receive digital currency that could be spent and traded locally to support further actions related



to Our Food Future. The approach is similar to store loyalty programs and those used in cryptocurrency. As such, a mechanism for “spending” the accumulated social currency will need to be identified as part of the development.

This is an active area of development in the technology world, largely driven through distributed ledger technology such as Blockchain. Implementing social currency will require a very structured specification to ensure that it is achievable and directly addresses the needs of the projects.

Guelph-Wellington views distributed ledger technology as an extremely promising tool that may be capable of achieving results that are extremely difficult, if not impossible, to achieve using traditional methods. As with any new technology, the key to employing a distributed ledger technology in the ecosystem will be to deploy it against a very well-defined requirement with specific, measurable goals and scope.

4.5.3 Geographic Information System (GIS) mapping

GIS technology will be instrumental for our food environment assessment project (Project 1), allowing us to produce a nutritious food baseline map. This technology will enable us to compile geographic data and generate interactive maps using mapping software (e.g., ArcGIS). By mapping the food assets in Guelph-Wellington, we can then overlay neighbourhood information to identify areas that lack physical access to nutritious food.

GIS technology will also be used to support our Circular Municipal Waste Systems project (Project 9) and the development of visualization tools. Our research partners at the University of Guelph have already developed a prototype for an interactive online geospatial map. This tool will allow users to identify potential sites and interventions best-suited to prevent or repurpose food waste in Guelph-Wellington. Identifying these sites and interventions will follow the principles of “highest and best use” set out in the [U.S. Environmental Protection Agency’s food waste hierarchy](#).

4.5.4 Digital agriculture: technology capacity-building and adoption (on farm pilot)

As part of the asset mapping activities taking place in year one, we will work with local producer associations to explore the strengths of Wellington County’s agricultural sector, from producer efficiencies to consumer perceptions of the food that is grown here. In order to understand the complex agricultural landscape that exists within the county and support Our Food Future, existing technologies and data will be leveraged to help pull this information together. Additionally, the County proposes to work with farmers to test new digital technologies that will measure and record crop yields and quality. This research and demonstration project will enable us to continue to support the sector’s existing efficiencies to ensure sustained growth.

We expect as well that there will be similar opportunities for research and demonstration projects in the growing field of digital urban agriculture.

Meanwhile, we recognize that local food alone won’t sustain our regional food ecosystem. We will therefore look for targeted ways to help residents gain access to healthy, affordable food that we don’t and/or cannot produce here.



4.6 Approach to future-proofing the technologies

The core platforms on which applications will be developed and deployed will be non-proprietary, open-systems technologies employing a common standard API approach.

Should FIWARE be selected as our data collaboration platform, it will meet these criteria. This platform is managed and maintained by an international association and is not controlled by any single corporation or national entity.

We will look to Smart City and technology standard organizations worldwide to learn best practices for future-proofing our platform and project-specific technologies. These organizations include:

- **Open and Agile Smart Cities (OASC)**, a non-profit, international smart city network that aims to create and shape the nascent global smart city data and services market. The initiative comprises more than 117 cities in 24 countries. It is driven by implementation and focused on open platforms and citizen engagement.
- **The National Institute of Standards and Technology's global coalition aimed at defining a Things-Enabled Smart City Framework**, which identifies pivotal points of interoperability that can help enable the landscape of diverse but interoperable smart city solutions.

4.7 Compliance with relevant legislative and regulatory requirements

The proposed technologies are transparent to legislative and regulatory requirements and will comply with any and all applicable requirements. Identifying and integrating legislative and regulatory requirements will be a key part of the initial solution-design process. This will include meeting the privacy requirements we lay out in Chapter 7.

4.8 Enabling interoperability, replicability and scalability

Our aim is to make data truly accessible, usable and barrier-free to enable decision-making processes to become transparent, empower residents and strengthen the relationship between residents and public organizations.

To that end, all tools and platforms to be employed will interact through well-defined, standards-based, open-API interfaces. Aligning to leading practices for open-source development avoids the potential for proprietary vendor technology lock-in and enables the integration of the platform with existing community systems and services through these API interfaces.

Meanwhile, the solution will be built on modules and/or microservices, allowing individual components to be replaced without affecting the platform as a whole.

The infrastructure on which the platform will be deployed is expected to be a cloud environment, allowing for ease of scalability and multi-site redundancy as required by the specific business needs of the applications to be developed and deployed.

4.9 Roles and responsibilities of technology partners

Technology partners will be engaged through a procurement process as service providers through Milestone or Service Level Agreement (SLA)-based contracts aligned to the



performance management metrics for Our Food Future projects. The project will aggregate the supplied technologies to deliver a platform against which these projects can be enabled.

The proposed Data Utility (Chapter 7) will provide the support for the Data Collaboration Platform. It is envisioned the Utility would be developed by Guelph-Wellington partners as a not-for-profit service, operated by an independent purpose-built service provider. The capabilities of the Data Utility will be defined by a published service catalogue, against which specific SLAs will be offered. Core governance partners in the Utility will be the municipalities, Public Health, the University of Guelph and Toward Common Ground (a community data collaboration).

4.10 Accessibility and usability of the technologies

To ensure that there are no barriers that prevent people with disabilities from accessing the technology or interacting with it, the W3C Accessibility Standards (WCAG 2.1) will be employed as a baseline for the development of Our Food Future applications and technologies.

Accessibility will also be a key performance metric tracked to define success. In all cases, we intend to take a user-oriented or human-centered design approach to ensure technologies are accessible, feasible, viable and desirable.

4.11 Identification of risks and development of appropriate mitigation strategies

When multiple sources of data from disparate source organizations and technologies are being aggregated and analyzed, the potential risk profile increases exponentially with the complexity of the system, both in terms of cybersecurity threats as well as privacy/sensitive data management requirements. We address privacy issues in Chapter 7. To address cybersecurity concerns, we will establish a comprehensive security and compliance governance framework prior to the deployment of any technologies.

Once this framework is in place, it will act as a guide to align mitigation strategies designed for:

- Prevention (approaches to stop cybersecurity breaches from occurring)
- Identification (processes and tools to determine if a cybersecurity breach is underway)
- Remediation (addressing the impact of a breach to minimize the overall impact)

Municipalities are familiar with the attendant risks that come with technology development projects, including procurement, system integration, data management, business process redesign and change management. We intend to utilize the tools, policies, processes and project management approaches embedded in our municipal procurement and technology departments, as well as the support of trusted consultants, along with data and technology expertise and support from the University of Guelph and our Public Health partners.

5.0 Governance

5.1 Governance framework: agile, open and inclusive

The supporting structures of this initiative are designed to support a collaborative, open, inclusive governance approach. This model views local government as a convener, facilitator and coordinator, as well as an active participant and contributor.



The City of Guelph has been working for several years on a “plural governance framework” on a number of fronts, creating new platforms for citizens, community partners, local government and the private sector to collaborate, make decisions and deliver services. During this work, we learned a lot about open government, open data, civic innovation labs, “open for business” initiatives, civic accelerators, community energy plans, climate change initiatives, participatory budgeting and digital engagement.

Smart City initiatives require testing and managing complex new approaches to governance and supporting project management structures that address risks. The governance structures implemented during the application stage of the Smart Cities Challenge served as a “proof of concept” for our governance approach.

To address the risks that are beyond our local expertise, we have developed collaborations with respected international experts and will continue to turn to these experts for support as needed. For the implementation phase, we are strengthening our public accountability structures and formalizing our governance and delivery structures. In emerging areas with less well-established standards — such as data use and governance — we intend to learn from international best practices, go slow and work with experts to contribute to the body of knowledge and praxis (see Chapter 7 for further information on how we plan on ensuring partners retain control over sensitive and personal data).

Our governance strategy includes a set of core principles such as inclusive innovation; strengthening democratic participation; creating new approaches for engaging private-sector partners as expert advisors and collaborators; and transparency and accountability.

During the project development stage of the Smart Cities Challenge application, the City of Guelph and County of Wellington held various workstream roundtables to support decision making, strategic direction, planning and development for the overall initiative and the nine specific projects. Each of these roundtables included broad-based sectoral representation with collaborators from the University of Guelph, Conestoga College, health organizations, food security and social innovation agencies, businesses and school boards, as well as residents, data and technology experts, and food producers. These collaborators contribute to the success of the initiative through their extensive networks, service delivery capacity and engagement channels with residents and client groups. Our partner-led roundtables co-created project plans and budgets, as well as carried out prototyping experiments. During the next phase, these same community partners will lead the implementation of the projects, and we will add new partnerships and expertise where required.

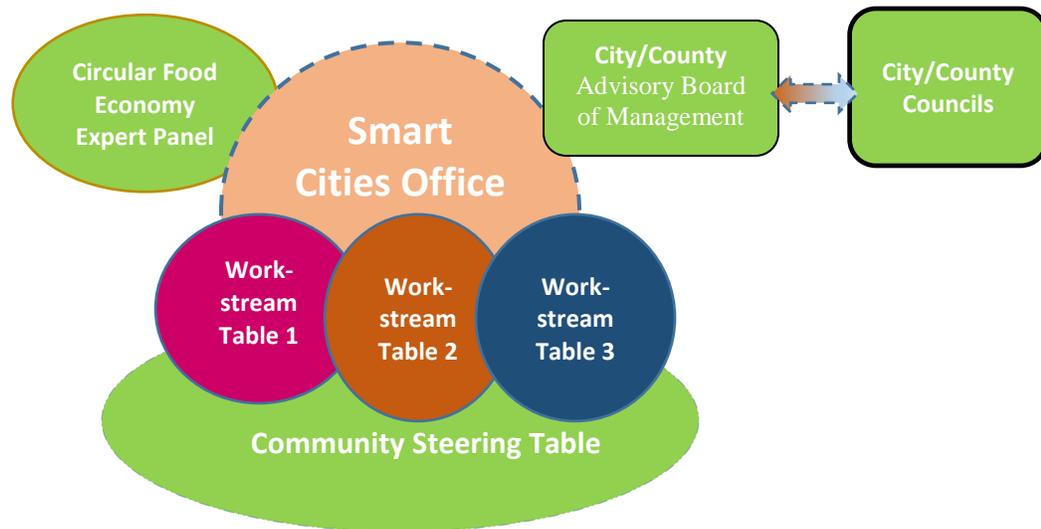
Given the success of this approach to date and the ongoing commitment of the partners to lead this work, we intend to largely continue with these existing structures. This will allow us to move quickly to begin implementation.

5.2 Governance model

Going forward, the overall initiative coordination will come from a formalized Smart City Office (SCO), hosted by the City of Guelph, with support from core City and County staff. This approach allows us to benefit from existing municipal processes, as well as internal financial, legal, communications and project management capacity. However, we will continuously

monitor the effectiveness of this approach and carefully consider options for evolving the governance model in future if needed (e.g., becoming a not-for-profit entity, municipal service or business corporation).

Figure 5.1: Our Food Future Governance Model



5.2.1 Smart City Office – Project Management

The SCO will provide project management, administration and oversight for the execution of key project milestones and deliverables. The SCO will be responsible for coordinating the governance system, financial administration and performance monitoring/reporting. It will also provide secretariat support to Workstream Leadership Tables (see 5.2.4 below).

The City and County will provide in-kind support at the Executive Director level to ensure objectives are being met, develop national and global partnerships, build private-sector funding partnerships, disseminate and promote knowledge, and ensure access to committed municipal services and resources.

A Program Director for the initiative will be responsible the day-to-day implementation and execution of deliverables, contract management, outcome and financial reporting, stakeholder management and coordination, budget administration, and Governance Secretariat support.

The SCO provides a primary point of contact and locus of control and is responsible for the overall issues, risks and change management requirements that are inevitable for large-scale, complex, multi-level initiatives. It will also coordinate and deliver the engagement, communication and performance management functions and guide the implementation of technology and data strategies, on behalf of all the projects (for details on the engagement strategy, see Chapter 6)

5.2.2 Advisory Board of Management & City and County Councils — strategic leadership and accountability

To ensure public accountability and to continue coordinating a joint City/County initiative of this nature, we intend to create an Advisory Board of Management. Operating under the



authority of Guelph City Council, this board will provide the strategic direction and oversight for Our Food Future as a whole. The Board will be responsible for monitoring the implementation and achievement of the circular food economy vision and objectives, providing financial oversight, addressing the ongoing sustainability of the initiative and resolving issues where required.

The members of this Board will meet quarterly and will consist of senior executive representatives from:

- key project partners (3 members)
- political representatives (2 members)
- Chief Administrative Officers from the City and County (2 members)

Additional representation will be sought from the public at large that reflects principles of diversity and inclusion.

Annual public reporting will occur during a scheduled City and County Council meeting. These meetings are advertised to the public and live-streamed on the City's website. Members of the respective Councils and the public will also have the opportunity to inquire about the progress and direction of the initiative on behalf of their constituents.

5.2.3 Circular Food Economy Expert Panel — national and international expert advice

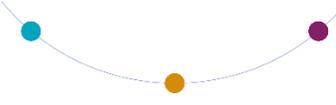
To expand our knowledge of international Smart City best practices, developments in technology and data, innovation approaches, and developments in circular food economy thinking, we intend to seek expert advice from national and global leaders in these fields.

During the initial phase of the Smart Cities Challenge application, we established a Transitional Advisory Board with diverse representation. This board includes executive-level membership from the community, small and medium enterprises, large businesses, the University and College sectors, the tech sector, public health, the Ontario Centres of Excellence, the Ontario Federation of Agriculture, Ontario Agri-Food Technologies, Bell Canada and RBC.

The members of this Transitional Advisory Board will meet to guide the initiative in its initial launch, providing subject matter expertise and strategic advice, supporting knowledge mobilization, and assisting with the establishment of a permanent national- and global-level expert panel for the initiative.

5.2.4 Workstream Leadership Tables — Implementation

The three Workstream Leadership Tables are Nutritious Foods; Circular Jobs and Businesses; and Waste as a Resource. These groups have been responsible for identifying problems, collecting data and developing project plans for each of Our Food Future's three goals. Each Workstream identified, developed and coordinated several interconnected projects deemed necessary to achieve the goal and outcomes. Project Leads from each Workstream reported directly to the Steering Committee during monthly meetings. Members of the Workstreams met independently and collectively on a monthly basis at joint Workstream meetings to share information, reduce overlaps and identify dependencies in the overall initiative.



Moving forward, the Workstream Leadership Tables will shift their focus to ensuring the coordinated and synergistic implementation of the projects. These tables will consist of the Project Delivery Partners (organizations contracted or designated to deliver the projects; Chapter 8) and core collaborators.

5.2.5 Community Steering Panel — implementation and engagement

The **Community Steering Table** includes core delivery partners, as well as organizations that may not be directly involved in project implementation but play a supporting role in achieving the outcomes of the initiative. This local community-coordination table will receive bi-annual reports from Project Delivery Partners and provide advice regarding implementation, resource coordination, community and stakeholder engagement, and outreach. The membership of this multi-sector table reflects principles of diversity and inclusion. As part of ensuring we clearly hear the voice of residents, our Engagement Strategy includes the development of a **Digital Panel** that engages residents in providing input on aspects of the initiative of interest to them. The project will also establish a Guelph-Wellington Food Policy Council (GWFP) to promote food system innovation, and facilitate food policy development, with a sister Youth Food Policy Council.

5.3 Governance and Project Delivery Partners

This initiative has captured the imagination of our local community and garnered increasing interest from beyond our regional borders. Our open and collaborative approach works to involve stakeholders and partners as **collaborators** at multiple levels of the initiative. Although their names and involvement are too extensive to outline here, detailed project plans, public discussion papers, videos and other collateral can be found on [FoodFuture.ca](https://www.foodfuture.ca).

Evidence of various partnerships and in-kind contributions are also provided in over 40 Letters of Support received at the time of application submission (Appendix A). As the summary table in Appendix A indicates, leaders within the agri-food sector, businesses, community organizations, education and research institutions, and other governments have all confirmed significant support for Our Food Future. Meanwhile, our supporters have pledged \$2.8M in in-kind contributions over the next five years.

In some instances, the Smart Cities Office will provide support and act as a catalyst between agencies to encourage collaboration and relationship building. In other instances, we will be contracting directly with agencies and partners to implement our identified projects.

The chart below identifies the implementation roles of our core **Project Delivery Partners**. Project Delivery Partners may have responsibility for a combination of the following roles:

- **Leads:** Provide leadership for the implementation of the project. In these instances, direct contract management isn't anticipated.
- **Expert Advisors:** Provide guidance and advice, mobilizing knowledge networks to support implementation.
- **Delivery Agents:** In these instances, we will be contracting directly with agencies to execute some or all of the goals and milestones of the project. Expectations will include reporting and monitoring.

A note on private-sector collaborators: When developing our projects, we engaged the private sector as collaborators, key informants and expert advisors, and they will continue to be involved in implementation. However, we learned that they have limited time available to commit, so we have to use their time strategically. We also know that moving forward they may wish to respond to our challenges and procurement calls. For these reasons, these collaborators participate primarily through our strategic governance tables and engage, as appropriate, through each of our Project Delivery Partners.

Table 5.1: Project delivery partners

Project Delivery Partners	Description	Roles & Responsibilities
10 Carden (10C)	Social innovation agency	Lead/Delivery Agent: Harve\$T Impact Fund project Expert Advisor: social innovation; social enterprise development; social finance
Arrell Food Institute, University of Guelph	Education, research, knowledge mobilization	Co-Lead: New Food Economy Skills and Training project Expert Advisor: agri-food innovation; student collaboration and participation in projects; education and awareness
City of Guelph; County of Wellington	Local government	Co-Lead: Leveraging municipal waste systems and Circular Food Economy Innovation Hub Delivery Agent: project management; engagement; innovation challenge; civic accelerator Expert Advisor: waste diversion, economic development, engagement; intergovernmental relations
Conestoga College	Education, training and applied research	Co-Lead/Delivery Agent: New Food Economy Skills and Training project Expert Advisor: job training, education and awareness
Guelph Chamber of Commerce	Business development	Expert Advisor: business enterprise development
Innovation Guelph	Regional Innovation Centre	Lead/Delivery Agent: Circular Food Economy Innovation Hub

Project Delivery Partners	Description	Roles & Responsibilities
		Expert Advisor: business development and commercialization
Long View Systems	Information tech services & solutions	Expert Advisor: data and technology
Ontario Agri-Food Technologies	Agri-food technology innovation	Expert Advisor: agri-food data & technology innovation; agri-food innovation; vice-chair Transitional Advisory Board
Provision Coalition	National, non-profit organization serving food and beverage companies	Co-Lead: Waste as a Resource projects Delivery Agent: Business Tools & Services project Expert Advisor: business development and waste diversion
The SEED/Guelph Community Health Centre	Food security non-profit	Delivery Agent: demonstration project Expert Advisor: food security innovation, social enterprise development, urban agriculture
Toward Common Ground	Partnership of social and health service organizations	Co-lead: data & technology (Data Utility) Expert Advisor: Information technology & privacy/Nutritious food project
University of Guelph	Canada's Agri-food University	Co-Lead: data & technology (Data Utility) Delivery Agent: Research partnerships in multiple projects Expert Advisor: agri-food innovation, commercialization, business development; student collaboration and participation in projects; job training/education and awareness
Upper Grand District School Board; Wellington Catholic District School Board	Education	Delivery Agent: job training, education and awareness
Waterloo Wellington LHIN	Local health network	Expert Advisor: Research partnerships in multiple projects, food security, health, education and awareness

Project Delivery Partners	Description	Roles & Responsibilities
Wellington-Dufferin-Guelph Public Health	Public health agency	Lead/Delivery Agent: Nutritious food projects Co-Lead: data and technology (Data Utility) Expert Advisor: public health, data, privacy
YMCA-YWCA	Community service organization	Delivery Agent: job training, education and awareness

6.0 Engagement Strategy

6.1 Approach to engaging residents and stakeholders and ensuring buy-in

The City of Guelph, in partnership with the County of Wellington, is recognized nationally and globally for its innovative and inclusive engagement practices. The City of Guelph’s Community Engagement Framework (one of the first municipal examples of its kind) clearly sets out policy, practice and guidelines to provide opportunities for residents and stakeholders to participate in making change. This approach, rooted in the [International Association of Public Participation’s](#) engagement processes and principles, aims to open up government and enable barrier-free civic participation.

Using a theory of change approach (Chapter 2), we engaged stakeholders to create a shared vision for Our Food Future and ensure broad-based buy-in. This approach helps expose assumptions, reveal differences between stakeholders and build a shared understanding of what we intend to achieve and how to develop the mutually reinforcing activities to achieve it. Ultimately, it will help us align each of the circular food projects with community needs, designing solutions that work for diverse populations and in different contexts across Guelph-Wellington.

6.1.1 Engagement principles

Our mission is to enable everyone to see a role for themselves in this wholesale change initiative. The guiding principles of our engagement and communications strategy are to:

- Use engagement as a tool to promote ownership, shift mindset and behaviour, and create impactful change.
- Ensure everyone can see themselves as supported stakeholders in the initiative.
- Facilitate broader understanding across our communities and beyond through peer-to-peer influence and sharing.
- Enable barrier-free engagement opportunities that support everyone to contribute in each project.
- Continue to activate and grow our network in co-production and co-delivery of solutions.
- Make sense of our collective progress together and report this openly for others to learn.

- 
- Create the systems for effective knowledge transfer between stakeholders to promote continuous and collaborative program innovation and public education.

6.2 Looking back: Insights gained from engagement to date

Over the past six months, we've mapped our network and gained an in-depth understanding of our community and the roles everyone plays.

6.2.1 Stakeholders

To date we've engaged the following diverse groups:

- Residents from 13 distinct urban neighbourhoods and seven towns and townships, representing a diversity of demographics, including age, gender, culture, socioeconomics, levels of food insecurity and more
- Farmers and food producers
- Food businesses and social enterprises
- Business and innovation support organizations
- Funders and investors
- Community collaborators (e.g., Yorklands Green Hub, Guelph & Wellington Task Force for Poverty Elimination, etc.)
- Social service providers and agencies (e.g., YMCA-YWCA, library systems, Guelph Community Health Centre)
- Educational institutions (public and separate schools, universities and colleges)
- National and international innovation institutes and think tanks
- Indigenous leaders and community experts
- Regulators and three levels of government

6.2.2 Engagement tools and activities used to date

To date, we've connected with these groups over the three main phases of our Community Engagement Plan. Phase 1 focused on gathering information and shaping the overall vision. Phase 2 focused on testing models and ideas. Phase 3 focused on defining and piloting the "Be a Food Future Star" public awareness campaign to start promoting Our Food Future more broadly to the community and prompt early commitment to behaviour changes. Our five-year engagement strategy (outlined later in this chapter) will build on these engagement activities.

Phase 1 activities: Baseline, awareness and recruitment

- Coinciding with World Food Day, launched an easy-to-use website (FoodFuture.ca) that provides information about our initiative and served as an entry point for digital engagement.
- Created an interactive digital engagement platform ([Engagement HQ](#)) that enabled stakeholders to share their stories, complete surveys, ask questions and learn how they could get involved. This allowed many people to participate when in-person opportunities were not accessible.
- Created a core group of City, County and community partners to provide oversight (Chapter 5), co-create our theory of change, and help develop project scoping and implementation plans.

- Hosted 34 partner meeting and events, engaging more than 150 highly involved stakeholders.
- Hosted 30+ community outreach events to provide opportunities for rich conversations and information sharing, resulting in more than 2,000 interactions with the broader public.
- Distributed a [Food Future quiz](#) designed to confirm community interest, establish a baseline of current knowledge and raise awareness of food system issues.
- Created a [communications and engagement toolkit](#) for our advocates and champions to help them promote the initiative and encourage others to participate.
- Coordinated with the communications departments of our many partners to engage with the media to promote positive stories that support the initiative.
- Ran an intensive social, video and print media campaign to raise broad community and stakeholder awareness and invite participation in co-creating Our Food Future. This included:
 - More than 3,275 social media engagements and 500+ followers
 - 12 local newspaper advertisements with weekly readership of 90,000+ people
 - 7,500+ postcards distributed at City/County facilities and events
 - In the County, where residents must pay for the garbage bags used for curbside collection, branded nearly 900,000 garbage bag packages with the Our Food Future initiative and inserted waste reduction tips
 - Twice daily radio ads over a four-week period on three radio stations
 - Key messages displayed on 20 closed-circuit screens at City and County facilities
- Developed plans to survey 600+ rural Wellington County residents to gather feedback around the purchasing, preparation and disposal of food as well as access to local and affordable food.
- Surveyed more than 50 local producers through the Wellington Federation of Agriculture to gather insights related to the overall vision and goal of Our Food Future, including technology and IT needs.
- Surveyed 37 local food and beverage companies to better understand their businesses and identify their current challenges.
- Hosted a Food and Beverage Processors Roundtable with 32 local businesses to discuss needs, identify short-term opportunities and inform longer-term planning.
- Actively engaged with Indigenous representatives and community champions from the Grand River Métis Council, the Mississaugas of the Credit First Nation, local community leaders, and Indigenous study leaders from the University of Guelph and Conestoga College.

Phase 2 activities: Exploration, experimentation and validation

- Piloted a “Circular Food Economy Collision” event, which tested elements of the proposed Circular Food Economy iHub project. This immediately created two new collaborations between a social enterprise and local business.
- Hosted key stakeholders in a value-stream-mapping pilot exercise with the goal of developing a more comprehensive picture of losses across a given value chain. As a



result, a better picture of the value of waste as a resource and potential for interventions and further economic development opportunities could be identified.

- Held an “innovation challenge” as part of the Globe Capital 2019 conference’s [Capital Exchange Cleantech Matchmaking and B2B event](#) — an event that brings together more than 150 investors, cleantech companies, solution providers, government representatives and corporate leaders from across North America.
- Sponsored and presented at the “[Using the Power of Data for Making Food Sustainably](#)” conference, with over 100 attendees
- Presented at Environment and Climate Change Canada’s Workshop on Reducing Food Loss and Waste to 100+ experts from government, industry and not-for-profits about opportunities to measure and reduce food loss and waste across the food supply chain

Phase 3 activities: Champion and action

- Launched a pilot of the **Be a Food Future Star** campaign with several community partners and influencers. Feedback, data and insights from this test phase will be reviewed in mid-2019 and inform the tactical details for a full five-year version of the campaign. The pilot phase features:
 - extensive digital and traditional media activity, featuring local success stories and videos of local circular food economy champions; facts and figures about local food nutrition, access and food waste concerns; and simple tips and advice for families and businesses to begin modifying their behaviours
 - an online “do-it-yourself” public toolkit providing [50 tips for food waste reduction and an action pledge](#)
 - a pop-up Food Future Star pledge station where children and families can obtain Food Future Star decals and pledge to reduce food waste
 - a restaurant-sponsored campaign championing circular food menu items while supporting local food security programs
 - a challenge partnership involving local public and separate school boards to prompt in-class conversations about nutrition and inspire children and their caregivers to reduce food waste at school and at home
 - community events at the YMCA-YWCA and at City and County libraries, where presenters such as key partners, local chefs and subject experts from the University of Guelph shared their insights, expertise and useful tips for families

6.2.3 What the engagement told us

Our engagement revealed Our Food Future’s vision resonates with the Guelph-Wellington community. Ninety per cent of our survey respondents said they were excited to hear about the work and that it was important to think in new ways about food.

We heard very clearly that residents believe in the importance of ensuring everyone has enough nutritious food to eat. On our [online engagement platform](#), we received comments like “For a world in which many people are dying of hunger and we are suffering from a resource shortage, we waste a lot of food.” We also heard that people want to be part of the change and that they see immediate value in working on this shared challenge.



Our business community also saw significant potential in the initiative. In Guelph’s recent Community Planning survey, respondents ranked Our Food Future as one of the three biggest opportunities that local businesses can take advantage of.

Meanwhile, the feedback from our stakeholders has been overwhelmingly enthusiastic. The following testimonials are just a few of the many we have received:

“I am proud to be a part of this collaborative process — where leaders in the community are coming together to empower the lives of citizens and businesses”

“As a result of my work on the Smart Cities proposal, I have been more aware of food waste and have consciously changed our family’s behaviour to waste less food”

“The Smart Cities challenge has helped to bring together stakeholders across the social, environmental and economic development sectors to truly collaborate like has never been seen before to solve real world problems”

6.2.4 Experienced/expected reactions and approaches for managing potential issues

Our engagement efforts also provided us opportunities to gauge reactions from the community and helped us flag challenges to address as we move forward with our engagement plan. These challenges include:

1. **Not upsetting the apple cart.** Our engagement process must recognize and be respectful of other food-related efforts already underway. If done insensitively, this type of initiative can destabilize community action by upsetting core actors already doing great work.
2. **Recognizing that everyone is a stakeholder.** As a basic and universal need, food affects every member of our community. As such, we need to design an engagement strategy that is as inclusive and extensive as possible.
3. **Recognizing that many of our partners are already working at capacity.** We need to find ways to catalyze transformational change without overwhelming the organizations we work with.
4. **Cutting the “gobbledegook.”** Our community events and surveys highlighted the importance of using plain language and finding ways to connect with stakeholders on a human level.

6.3 Looking ahead: Our strategy for the next five years

We have already developed a strong brand and brand narrative for the initiative and have drafted a comprehensive engagement and communications strategy. Over the next five years, we intend to build on those strong foundations as outlined below.

6.3.1 Inclusivity and engagement

Our community is made up of many distinct communities: the City of Guelph with its diverse neighbourhoods, plus the seven member municipalities that make up Wellington County, each with its own municipal administration. We know each one is intimately connected to the food system, but they have different experiences, expectations and roles to play. Our challenge was — and is — to better understand how different communities, organizations and individuals



experience the food system, what parts of the food system they are already working on or want to change, and how they want to work together to make further change.

Fortunately, Guelph-Wellington has strong cultural and historical connections to the food system. Approximately, 7,000 Guelph residents are employed by 1,600+ businesses and entrepreneurs in the agri-innovation sector, and many residents, community organizations, businesses and educational institutions have been working for a long time to ensure good-quality, nutritious food is available to everyone.

Fostering inclusivity in our engagement strategy will involve:

- **Bringing new people to the table** by finding people who haven't been involved in the food system conversation and encouraging them to participate in actions large or small.
- **Bridging urban/rural differences.** Wellington County and the City of Guelph are two very different geographies. The City of Guelph is quite compact and urban in nature. The County is made up of seven towns and townships spread over 2,657 square kilometres. Finding ways to engage with people and bring them together means people power, budget and a lot of creativity.
- **Recognizing that everyone is unique.** Our communities are diverse and changing. Barrier-free engagement — in all its forms — is a key goal and challenge for this initiative. Meeting people “where they are at” is about more than physically going to where they might live, work or gather. It's about inclusive engagement that respects and reflects our differences in culture, language, physical abilities, identity, age, experience and capacity.
- **Celebrating all cultural practices.** We need to ensure we solicit and celebrate the achievements and contributions of diverse cultures in nutrition and waste reduction by partnering with local immigration services and cultural support groups and gathering input through engagement tactics.
- **Speaking their language.** We will produce materials in multiples languages to reach our diverse communities.
- **Building and sustaining strong partnerships with influencers.** Agency and authority with many populations is best established through the organizations and influencers that have already established trust and understand their unique needs.
- **Acknowledging our Indigenous foundations.** The County and the City are located on the ancestral Indigenous lands of the Attawandaron people and the treaty lands and territory of the Mississaugas of the Credit. We recognize our important relationships with our neighbours the Anishinaabe, Haudenosaunee and Métis communities. Through Our Food Future, we have an important opportunity to engage in active listening with our Indigenous residents and neighbours and draw on their long-standing traditions of environmental stewardship and land-based learning. We recognize that engagement between settler communities and Indigenous peoples must be authentic, respectful and grounded in mutual trust and open-mindedness. For further details, see Chapter 9.

To help drive system-level change, we plan to involve a wide variety of residents and stakeholders over the next five years, including:

- Truth-tellers and those with lived experience who can ground theory in reality and share foundational wisdom not bound by organizations, technical disciplines and hierarchy.
- Problem solvers and innovators who bring world-class technical experience and knowledge in circular economies, food systems and waste innovation.
- Champions, volunteers and community leaders who are passionate about creating change, as well as early adopters who have the ability to inspire others to action.
- Connectors and influencers who can help to activate and animate the conversation across the community, across Canada and around the world.

6.3.2 Key engagement tools and tactics to ensure high levels of sustained engagement

Behavioural Insights Program

Some of the projects within this initiative focus on shifting behaviours in the community (for example, reducing food waste or making healthier food choices). To do that, we will be drawing on the extensive expertise and experience of international Behavioural Insights Teams (from the U.K. and within the Canadian federal government).

We plan to follow the TESTS methodology (Target, Explore, Solution, Trial and Scale). This tried-and-true framework will involve developing, refining and testing five behavioural interventions (or “nudges”) based on in-depth research and the latest behavioural science literature.

Digital governance and engagement gateway

This tool will build on the [digital Engagement HQ platform](#) that we launched in phase 1. The digital governance and engagement platform will be integrated with social media to facilitate dynamic participation, leveraging social currency, information sharing and learning. This will be a key vehicle to promote our initiative and get feedback, facilitating two-way communication between project teams and the broader community. It will also facilitate better information flow, collaboration, efficiencies and co-production across the governance structure.

The platform will enable:

- A Digital Panel of residents that will serve as a core part of our governance structure, representing our communities and the diversity within it. In addition to guiding the overall direction of the broader initiative, they will provide insight on individual solutions and help us better understand community need and behaviours.
- Virtual community activators (Our Food Future champions who are social media influencers, complemented by bots) to animate the digital space, promote and build a base of influencers and champions.
- Opportunities to build community, such as the ability to create and find in-person food-related meetups, events and learning labs.
- Co-production functionality that supports task, meeting and document management and workflow to enable the core teams and committees to work collaboratively and connect easily/transparently with the community.
- Gamification functionality to incentivize broad community participation and behaviour changes across the projects.

- 
- Surveys, polls, forums, discussions, storytelling and commenting tools, geospatial mapping and real-time data tracking of activities, attitudes, behaviours and more.
 - Data integration with the Data Collaboration Platform (Chapter 4) to support solution development and testing.

Audience: Project teams, workstream leads and participants, Guelph-Wellington residents, community partners, local and global businesses, academic institutions, think tanks, food producers, farmers, social entrepreneurs, investors, other levels of government

“Reimagine Food” Campaign (Project 7)

With Our Food Future’s public awareness campaign, we created our identifiable brand and strived to educate Guelph-Wellington residents on the costs of food waste, to increase demand for the products of a circular economy and to build stronger relationships between producers and consumers. It developed a baseline of community knowledge and information with all stakeholders for the entire initiative.

As part of the third phase of our engagement strategy, the Our Food Future Star campaign focused more explicitly on general public awareness and outreach activities related to the key themes of nutrition and food waste, resulting in a shift in behavioural change.

Over the past six months, this campaign has proved to be a successful strategy with a strong, well-known brand. We will continue to evolve this campaign throughout the initiative as both an engagement tactic and a behaviour change strategy.

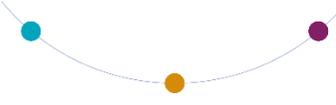
Moving forward, drawing on data and insights from the digital governance and engagement gateway and from field research studies, this Reimagine Food campaign will:

- Mobilize solutions and interventions that drive behaviour change.
- Probe current behaviours and barriers to change and share this input to support each project and lead effective change.
- Encourage residents and stakeholders to reduce waste in the food system, improve nutrition, support broader community health and get involved in food system solutions.
- Deploy, measure and adjust communication channels to encourage change.
- Integrate with the digital governance and engagement gateway as well as in-person activities.
- Include new innovative in-person and digital features to mobilize knowledge from each project to support community and business behaviour change.
- Use behavioural insights methodology to evolve the campaign over the five years (through behaviour mapping, intervention design, rapid testing and iteration).

Audience: Guelph-Wellington residents and food businesses involved in the food system

Experiential pop-up stations

Building on our “pop-up” successes over the past six months, we will take our engagement on the road to help us reach residents and stakeholders from across our rural and urban landscape. These pop-up stations will also serve as a mini “user research and testing labs,”



where project teams can connect with residents directly to gain insights, promote dialogue and test concepts and prototypes. They will also provide opportunities for education and awareness. Pop-up station venues include schools, community kitchens, community association events, public spaces, business forums, trade events, investor events and collision events.

Audience: Guelph-Wellington residents, students, businesses, partner organizations

Community Activator Program

If community is to fully engage with this initiative, they must see themselves represented in the work. To achieve this, we will recruit, train and mobilize a team of community activators who will conduct in-person and digital outreach. This program will:

- Build our base of champions and influencers involved in outreach and engagement across our communities
- Help facilitate and cultivate strong partnerships with local and global influencers and agents of change to support a full community approach to awareness
- Enable us to conduct “in-the-field” research and engagement
- Support learning and awareness.

Audience: Guelph-Wellington residents, partners and community groups

Annual community “change makers” events

These annual events will serve to celebrate and recognize our progress, allow us to check in on the “health” of our network and identify future opportunities for the initiative. These events will also feature a virtual global element, allowing circular food economy partners, think tanks, business leaders and representatives from other cities from around the world to participate.

Audience: Guelph-Wellington partners, community groups and international collaborators

Ongoing engagement and communications evaluation

Throughout the course of this initiative, we will be tracking and measuring the impact of our engagement and communications strategy, making course corrections along the way as needed. These evaluation activities include:

- Two community surveys and focus groups in years two and five
- Ongoing partnership “health” evaluations, using online and in-person methods to evaluate governance efficacy and assess if the initiative is meeting its engagement and communications goals

Engagement with newcomers

Engaging newcomers is especially important because the population of culturally diverse groups in Canada is expected to increase in the coming years. By 2034, immigration will account for 100 per cent of the country’s population growth, and economic sustainability, especially in rural areas, will depend on newcomers. Currently, the County of Wellington is investing heavily to attract and retain newcomers to the region.



Our Food Future’s newcomers pilot will lay a solid foundation for culturally appropriate food production in the region. Working with the University of Guelph, this project aims to build capacity for culturally appropriate food production, distribution and consumption within identified communities, while meeting a diverse range of food needs.

The project will leverage existing partnerships and relationships to identify the food needs of new Canadians in one of Guelph’s lower-income neighbourhoods, grow this food on the University of Guelph urban farm, and provide farming skills to newcomer women and youth (Chapter 9). As a result, this population will have access to nutritious, culturally appropriate food that might not otherwise be available or affordable. We intend to scale up the project to address other identified areas of food insecurity and transfer ownership and autonomy to those communities via collaborative skill-sharing and apprenticeships.

6.4 Risks and mitigation strategies

We have identified the following potential risks and barriers that might prevent broad engagement, as well as the mitigation strategies we will use to address them:

Risk: Lack of technology, resources and internet access makes it difficult to engage rural residents.

Mitigation strategies:

- Improve internet access in rural areas through the [Southwestern Integrated Fibre Technology \(SWIFT\) Network](#) (a \$197,880,000 investment by the federal and provincial governments and the County of Wellington aimed at building a high-speed fibre optic network across southwestern Ontario).
- Continue to diversify marketing and outreach initiatives utilizing tried-and-true methods (e.g., local newspapers, radio, community networks, farmers’ associations, etc.).
- Investigate subsidizing Wi-Fi hotspots for key contributors and digital panel members.
- Bring our outreach activities to central locations where people are already gathering.

Risk: The diversity of our Guelph-Wellington communities means that not all communities will have the same resources or local amenities.

Mitigation strategies:

- Offer materials that are accessible and in multiple languages.
- Incorporate applicable auto-translate functions on our digital platform.
- Leverage our Community Activator Program to help to create a network that is inclusive of the diversity that exists in our community.
- Involve our accessibility committees to ensure that solutions are responsive to differing needs and abilities.
- Reduce barriers to event participation by providing honorarium payments, childcare, transport options and lunch vouchers where required.
- Regularly engage and inform our core governmental partners to ensure broad and successful outreach and engagement.
- Engage each member municipality regularly to ensure that rural needs are met.

- Leverage the outreach elements that some of our projects include. For example, the iHub project aims to support and facilitate business supports to newcomers and immigrants, women and marginalized groups in an effort to create new circular food businesses and supports. By working with key partner organizations such as [Immigrant Services](#), [Local Immigration Partnership](#), [10C](#), [The Seed](#), and the [Guelph Community Health Centre](#), we will help connect these groups to the project.

Risk: Not all residents will automatically buy into the Our Food Future initiative due to limited resources, lack of interest and general fatigue towards community projects.

Mitigation strategies:

- Provide a range of opportunities (from big to small) to help engage all audiences.
- Ensure our activities build upon community interest.
- Steward and support changes the community has validated.
- Stagger engagement through a “drip” method that combines periods of activity with periods of “downtime” to limit audience fatigue.
- Make Our Food Future compelling by leveraging a strong visual brand, succinct messaging and community celebration stories.

Risk: Gathering and sharing information and input from the community is essential but can also create privacy concerns.

Mitigation strategies:

- Employ technical safeguards within our data-collaboration system that are designed to protect privacy (Chapter 7).
- Employ procedural measures and training to ensure sensitive and personal information is protected (Chapter 7).

7.0 Data and Privacy

7.1 How we plan to manage data

We believe that establishing a system of public data collection and use that is sustainable and participatory is a key step in building a healthy, circular digital economy. To do that, we need a robust data management plan.

A “classic” data governance model is designed for a closed system: a company, an organization, a government agency. As a result, the model focuses on data access: which department is allowed to access what data, and when. In contrast, Our Food Future will embrace an open system that interconnects public and private systems and stakeholders.

By establishing an open system, we will enable the collection and sharing of data from a variety of local independent sources including food production, grocery store purchases, food waste and health indicators. By combining and sharing this data across a variety of community partners, we will enable the community to design interventions specific to the local community or neighbourhood. For example, if data in one neighborhood shows health indicators that are lower than the norm, we will identify this as a specific challenge in that community. We will



enable our social innovators to look at the availability of healthy nutritious food and the local shopping patterns. We can then design, develop and test interventions specific to that community, rather than trying to address problems at a macro level.

Similarly, if our data shows that food waste levels are above average in a specific neighbourhood, we can challenge the community to develop interventions in that community to reduce or reuse those food products. One possible outcome could be a local pickup service that ensures that all healthy, nutritious food in that neighbourhood is collected and donated to a community partner like The Seed.

An open approach to data creates new opportunities and new challenges: combining datasets enables new inferences, but it also demands rules about who can build and use these inferences. This is relatively untrodden ground, not only in terms of the innovative uses of data and technology, but more importantly in designing civic engagement models, public-private partnership infrastructure and meaningful tools for values-based digital governance. There is a spectrum of approaches to building data governance mechanisms for smart cities and very little consensus on best practice.

Guelph-Wellington's approach is to start from an open platform, invest in data lifecycle management that deepens and broadens awareness, and build engagement processes to govern the transition as it evolves. Our data management plan therefore involves several components:

- Establish a Data Utility
- Engage our community
- Start with “safer” data
- Develop policies through use cases
- Progress to well-defined test projects and products/services

7.1.1 Establish a Data Utility

We plan to develop a public Data Utility, similar in concept of public utilities that provide core infrastructure services, such as electricity and water. The concept of a Data Utility is gaining momentum around the world as more cities recognize the critical nature data represents in effective community engagement. A Data Utility will become a critical infrastructure service, responsible to support the requirements of the residents of Guelph-Wellington on an open and secure manner.

However, providing secure, transparent access to data is only half of the role of the Data Utility. Equally important is integrating it with a solution/application development platform that will enable an innovation ecosystem for value-added services to be developed and monetized (Chapter 4).

The Guelph-Wellington Data Utility will be operated as a public trust, designed and governed according to the core proposition that access to public data is a service provided to the community to enable engagement, transparency, value creation and ongoing improvements in services. This will require the implementation of strict governance and security measures,



aligned to the requirements of the individual data sources and designed for reliability and resilience.

7.1.2 Engage our community

We will focus the first steps of our smart city data governance process by engaging the public in answering some foundational questions.

Year one will involve extensive work with the public and stakeholders. This will include a communications strategy to share how the City and County are proceeding with our data management plan. At the same time, we will very intentionally demonstrate a commitment to conservatism and caution around data relating to residents, building on the trusted stewardship relationship between residents and local governments.

We will also convene discussions with the community about the use of personal data, building out from “privacy by design” principles. We will approach these engagements from a human rights approach and include conversations about consent, agency, control, accountability, recourse for resolving issues and more. Engagement tools such as [Pol.is](#) (used frequently in Taiwan) or [Decidim](#) (from Barcelona) can help support broad public participation in these discussions.

Meanwhile, we will develop an inclusive, legally significant process for hearing, handling and responding to any disputes from stakeholders or community members who challenge the Data Utility’s decisions to grant or deny access to data, or to allow or deny specific uses of data.

Through the public engagement process, we will seek to answer the following questions:

- Who are potential stakeholders? Who is entitled to benefit from the Data Utility?
- How can new stakeholders be on-boarded?
- What responsibilities should a Data Utility start with? How can stakeholders provide advice on and modify those responsibilities?
- How does a utility stay informed about the needs of its stakeholders and continue to balance those needs against each other? Are there possible conflicts of interest between a utility and stakeholders?
- How can a community decide on rules for good data governance?
- What conflicts might stakeholders and the utility encounter?

Given the intention to build open-source infrastructure, it’s particularly important not to tightly define the platform or approach too early in this initiative. Ongoing engagement with the community of users around the tools they use will be critical.

7.1.3 Start with “safer” data

We recognize there are big questions about data, sovereignty, power, security, consent, agency and more — and no one has definitive answers. So how do we move forward when best practices are still unclear?

Across the projects in Our Food Future, common types of data include: administrative data (data describing assets and related information, including budgets), geospatial data (data



describing locations), personally identifiable information (data about people and their behaviours) and statistical and survey data (data collected for research or other purposes).

A significant amount of the datasets associated with agricultural and circular economies are publicly available, limiting individual risks and creating a clear supply chain of value. Other data collected in our projects relate to the categorization and location of assets. Our approach will prioritize the collection and use of these “safer” types of data so we can begin experimenting as quickly as possible.

7.1.4 Develop policies through use cases

We will start by identifying and prioritizing core use cases, where the Data Utility can provide sustainable value propositions to advance the circular economy. As part of our governance work, we’ll catalogue issues and considerations related to particular data types and usage. As we work through cases, we’ll create an assessment framework to support the onboarding process for the data related to new projects.

Creating a practical set of uses cases will allow recipients to go from the abstract concept of data to tangible examples of possible future uses. It will also help Guelph-Wellington attain public buy-in or social licence, which is critical to nurturing a supportive innovation ecosystem. Finally, it will create an environment where it is possible to say “no” to certain uses of data or to reserve decisions for future consideration.

By mapping requirements, market opportunities and research priorities, Guelph-Wellington’s Data Utility model will take a lean, iterative approach to developing circular economy use cases.

7.1.5 Progress to well-defined test projects and products/services

Next, we will identify small and focused test projects with clearly defined deliverables to work on with local businesses. These projects may help identify collaborative opportunities with other stakeholders and municipalities, driving the development of new hardware and software solutions.

7.2 Key milestones in our data management plan

Year one: Complete the data and privacy framework

- Establish a transitional Data Utility governance structure
- Hold public learning labs and stakeholder engagement sessions
- Create a “sandbox” environment to develop and test the Data Collaboration Platform
- Produce a dedicated innovation strategy that will explore, among other ideas, a patent collective
- Produce a Data Utility Governance Framework & Operating Model V.1
- Procure for the development of the Data Collaboration Platform V.1

Year one will involve setting up stakeholder groups to meet on a recurring basis, as well as an ongoing series of public events, both traditional and exploratory. For many people with limited knowledge of data governance issues, public participation in the topic remains highly inaccessible and challenging. In addition, those with expertise often crowd out those new to the space, creating an environment that makes learning difficult.



To address this dynamic, Guelph-Wellington will create a series of multi-disciplinary engagement approaches, in partnership with the public library, neighbourhood associations, community centres and other venues, bringing the conversation to places where residents naturally gather.

Using a range of available data and adding a few new sources, we will also begin to develop the Data Collaboration Platform that will underpin our Data Utility (Chapter 4). This process will follow a co-design model, engaging users from the beginning and exploring ideas through a mix of the iHub collision model, experiential pop-up stations, other events and internal use cases.

The [Canadian Open Data Exchange](#) (ODX) will provide in-depth expertise, taking practical use cases into production environments. This will help us create a hands-on innovation space for data businesses and also for a range of businesses that lack organized infrastructure or staff capacity to engage deeply on data.

In addition, we will have discussions about how the Data Utility will benefit the City and County internally. We will also invite a range of policy experts to participate in a full-day workshop to inform a draft innovation strategy, the output of which will be shared through ongoing public consultation for input and revision.

Smart City initiatives that utilize IoT data derived from public spaces inevitably bump up against the issue of rights and responsibilities in the use of personal/public data. The first deep engagement work on integrating personal data into the utility will happen with Wellington-Dufferin-Guelph Public Health — our initial personal data project. Drawing on their expertise and excellence in data stewardship, the test cases will help begin to shape policy for how, where and why de-identified personal data might exist in the utility framework. The Office of the Information and Privacy Commissioner of Ontario will continue to be an important key informant and collaborator on this initiative. Additional partners include the University of Guelph and our municipal information and privacy staff.

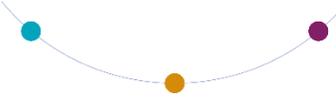
Finally, the open-source nature of the platform will encourage a small but growing set of software entrepreneurs to build and support the infrastructure.

Year two: Launch the Data Utility as a functional community service

- Data as a service is functional
- Publish and implement personal data project findings
- Produce Data Utility Governance Framework & Operating Model V.2
- Implement innovation strategy
- Procure for the development of the Data Collaboration Platform V.2
- Launch patent collective, if stakeholders are amenable to the idea

Year two will see the evolution of the stakeholder engagement work as it begins to develop into a more formal data governance structure.

The personal data project will have completed its first phase of reporting, which will include risk assessments, possible approaches, and consultation with a range of policy stakeholders (legal, privacy, economic development, human rights, etc.).



Around the world, a cross-sectoral policy approach to data management is beginning to accelerate, and we expect some degree of consensus will emerge from the next wave of research and global case studies. We will incorporate into our utility model:

- Any such emerging best practices
- The results of our personal data project
- Ethical guidelines used in academic institutions for experiments involving human subjects
- Learnings from the stakeholder engagement process

Work done in year one will inform the procurement process for the development of the Data Collaboration Platform. This work includes creating a feature list and requirements backlog that details the desired functionality of the system. Breaking our system needs into smaller components will enable us to procure and test pieces of the platform at a smaller scale.

Years three to five: Establish and share templates and best practices guides for other communities and achieve network maturity

As the model matures, community engagement and participatory governance will continue. We will also define operational metrics for the evolving development of systems.

Meanwhile, once the Data Utility and governance models are fully operational and stable, we will look at the best ways to share our infrastructure and insights with other cities globally — from the software code to the human resources support model to the successes and challenges of our public engagement process. A range of tools, code, documents and processes will also be made as openly available as possible online, allowing others to borrow from and revise them. It will also include contact information for Guelph-Wellington staff who can help interpret or apply the resources.

This library will be a place for sharing and interacting with other municipalities — across Canada and globally — and perhaps convening a community of practice for others that have adopted the data utility model locally. This can also be done through national networks of cities, such as the [Federation of Canadian Municipalities](#), [ICLEI](#) (Local Governments for Sustainability), and through the [Municipal Innovation Exchange](#), etc. These tools will help municipalities as they work together on issues such as climate change, resiliency planning and food.

7.3 Governance, ownership and control

Our data governance approach starts with our partners, whose backgrounds come from civic engagement, open data, open-source technology, law and governance. Guelph-Wellington will ensure that the Data Utility's governance, revenue model development and ongoing business architecture are transparent to the public. Meanwhile, given the crucial technical aspects of this infrastructure, the budget will include paid staff, as experience in other cities has revealed the limitations of relying on volunteers.

As with all digitally enabled projects, the Data Utility will need to develop a core set of value propositions, a legal personality and transaction infrastructure, and a sustainable revenue



model. These are foundational considerations, and the expectation is that the public engagement process will also contribute to identifying additional issues.

7.3.1 Core value propositions

To build a healthy ecosystem, our data governance program requires a core set of functions:

- **Rules and standards.** Establishing the norms, standards and templates for how parties share data, value and risk; under what conditions; and to what end.
- **Implementation and enforcement.** A set of practical, core functions that can range from building partnerships to monitoring data-sharing supply chains to enforcing agreements.
- **Dispute resolution.** Every system makes mistakes, and so it needs a mechanism to handle errors and adapt accordingly.

The Data Utility is designed to foster an innovation ecosystem and drive transformative change across the entire circular economy. A critical component of establishing sustainable foundations for those trust relationships will be transparently defining and enforcing a set of relationship standards and templates.

7.3.2 Legal personality and transaction infrastructure

One of the primary outputs of the public engagement and governance processes will be a set of requirements that help define legal approaches to anchoring the utility's innovation. At a minimum, we recognize that it will need at least three levels of legal infrastructure:

1. **Incorporation model for the utility and governance model.** As demonstrated by the competing proposals for data governance in Toronto, there are advantages and drawbacks to building a new institution, to nesting the utility in trusted institutions like libraries or statistical agencies, or to designing new institutional housing for the legal architecture. We will invest in public education and engagement that identifies the best approach for the Data Utility.
2. **Procurement of data and technology services.** Current leading models of procurement, such as the City of Barcelona's, guarantee access to raw data and other rights related to usage and license. We will create procurement checklist based on Barcelona's model, adapting it to reflect local and federal laws, policies around purchasing, and other relevant factors such as open standards, open source, privacy and security. We will also leverage the expertise of other municipalities that already have established open-source ecosystems, such as Montreal.
3. **Data and derivative product licensing to third parties.** The Data Utility design will be similar to a clearinghouse, brokering licences between data holders and data processors. Guelph-Wellington will empower the Data Utility's governance to define a broad range of data licence terms and conditions, which contemplate reuse conditions, competitive use restrictions, re-contribution requirements and a range of other approaches to maximizing public value.



7.3.3 Sustainable revenue model

We recognize that revenue involves deeply political and ethical decisions, and we are committed to ensuring that the Data Utility develops positive, transparent and fair revenue opportunities. Guelph-Wellington will co-design the initial revenue structures through engagement with a range of stakeholders. The following potential revenue models will be explored:

- Tax supported — The government finances the Data Utility from public revenue sources (e.g., integrated into other municipal tax streams)
- Rated — The government hosts the Data Utility and charges transaction costs from users, similar to fees for identification, visas and public services such as water (e.g., PayPal’s transaction fee model)
- Public/private partnership — A private sector group hosts the Data Utility, with public support and conditions, similar to public universities, service delivery businesses and utilities.
- Privately subsidized/owned — A private entity hosts the Data Utility, which it provides to the public as a service, similar to publicly funded health research or Wikipedia.

7.4 Consent

One of the biggest challenges facing current data governance models is the issue of informed consent. There are so many different and evolving ways data can be used that it is difficult to keep track of both complicated terms of service and open-ended licensing, where anyone can use the data for any purposes.

This type of open licensing has created a lopsided power dynamic, where the person or entity generating the data may lose control or sight of how it is being used. Once this happens, it’s very difficult to provide informed consent. That is why one of our core focuses will be to communicate details about usage in very granular and specific ways with all the parties involved in any data transaction. As noted above, we will use the City of Barcelona’s model as a starting point.

7.5 Accessible, interoperable and open-data approaches

Participants need to be confident that their data remains their own and that if they wish to withdraw from the Data Utility, there will be no proprietary vendor lock-in to prevent them from doing so. As we describe in detail in Chapter 4, our Data Collaboration Platform will be based on open-source/open-systems technology to avoid any risk of lock-in.

7.6 Open and big data strategies to ensure transferability and replicability

By building a healthy, sustainable, circular digital economy through open and inclusive governance, we are creating a stable foundation and replicable model for smart cities across the world. Ultimately, the Data Utility service can be scaled well beyond Our Food Future, and through this expansion the value of the aggregate data pool will continue to grow. In addition, the Data Utility concept can be replicated in other communities across the country, helping them to recognize the value of secure, open collaboration within their local data landscape.



To facilitate transferability and replicability, we are committed to using open-source/open-systems technology, such as the Data Collaboration Platform (Chapter 4), and publishing materials (engagement strategies, case uses, etc.) for use or adaption by others.

7.7 Data governance risks and mitigation

Stakeholder challenges — Stakeholders or members of the public could challenge the Data Utility’s decisions to grant or deny access to data, or to allow or deny specific uses of data. To mitigate this threat, we will develop an inclusive, legally significant process for hearing, handling and responding to disputes.

Breach — The Data Utility’s data may fall into the wrong hands, or a controversial stakeholder may gain access to data against the protests of other stakeholders. To mitigate this threat, we will use industry standard protocols such as privacy risk assessments (PIAs) and threat risk assessments (TRAs).

Poor data quality — The datasets the Data Utility connects to may be of variable quality, and data consumers may not have equal ability to identify and correct for low-quality data. To address this issue, we will draw on the experience of our partners, the work of municipalities/governments on enabling the public to address open data catalogue deficiencies, and experts such as ODX.

7.8 How we plan to address privacy and security issues

As we move into the implementation phase, we are aware that our data governance systems require appropriate facilities to govern potentially sensitive and commercially valuable data and must comply with relevant legislation. The following sections and our attached Preliminary Rationale Analysis (PRA) describe our approach to these issues.

7.8.1 Preliminary Rationale Analysis

Although detailed data requirements of this initiative have not yet been identified, personal information (PI) will likely be involved in the access to nutritious foods stream (data from public health studies) and the value from waste stream (waste bin RFID data from the City of Guelph). We have therefore developed a Preliminary Rationale Analysis. This PRA has been reviewed by the Office of the Information and Privacy Commissioner of Ontario, and the feedback they provided has been incorporated into the current version.

7.8.2 Data plan compliance with PIPEDA, FIPPA, MFIPPA and PHIPA

The key pieces of privacy legislation we’ll need to comply with are:

- **The Personal Information Protection and Electronic Documents Act (PIPEDA)**, the federal privacy law for private-sector organizations
- Ontario’s **Freedom of Information and Protection of Privacy Act (FIPPA)**, which provides a right of access to information from institutions and also provides a right to protection of personal information
- Ontario’s **Municipal Freedom of Information and Protection of Privacy Act (MFIPPA)**, which applies to local government institutions, including municipalities, school boards, and boards of health

- Ontario's **Personal Health Information Protection Act (PHIPA)**, which sets out rules for the collection, use and disclosure of personal health information

As we note in our PRA, each partner will sign a data-sharing agreement that clearly sets out the legal authorities for the collection, use and disclosure and the authorized purposes and parties, as well as breach reporting processes. Where disclosure of PI is permitted and necessary, the partners will be held to the legislated requirements of FIPPA, MFIPPA, PHIPA and PIPEDA and a signed data-sharing agreement. Training will be provided on legislation, policies and procedures for any organizations (such as local businesses or community agencies) that do not already have an established privacy program or who are not already subject to legislative requirements under FIPPA, MFIPPA, PHIPA or PIPEDA.

7.8.3 Data collection, generation, analysis, storage and transmission

The Data Utility will exist as a professionally managed data collaboration platform. A data collaboration platform enables interconnections between data providers and data consumers through standardized, open protocols. It does not copy data to a central location; the data will always remain within the control of the data provider. These data providers have the required data lifecycle management, security and privacy protocols in place in relation to their data holdings. Data Utility users will be able to transparently access data according to permissions they are granted by the data providers.

7.8.4 Integration of security and privacy into project design

The Data Utility will develop a set of security policies, standards and procedures to ensure the security and reliability of the service. These policies, standards and procedures will be developed in compliance with best practices established by ITIL (Information Technology Infrastructure Library) and COBIT (Control Objectives for Information and Related Technology), as well as the security standards established by NIST (National Institute of Standards and Technology).

Furthermore, the Data Utility will complete and publish the results of a SSAE18 SOC 2 audit on an annual basis to support full transparency. The SSAE18 SOC 2 audit focuses on a business's non-financial controls as they relate to security, availability, processing integrity, confidentiality and the privacy of a system.

7.8.5 Data minimization and de-identification

Our principle will be to de-identify data wherever possible, as we describe in our attached PRA.

7.9 Privacy and security risks and mitigation

There is a risk of de-identification or data displaying trends/patterns that are not apparent in individual datasets. This can be mitigated through review and approval processes prior to sharing data on the data-sharing platform and by ensuring adequate de-identification under the supervision of a de-identification expert and in consultation with the Ontario Information and Privacy Commissioner.

Cybersecurity is an issue of concern to all levels of government and to corporations worldwide. We expect to learn from emerging best practices and to seek advice from our Expert Panel.



8.0 Financial

Funding for the technology strategy, including challenges, pilots, proofs of concept and development of technology is embedded in the Pathfinder Projects and in the Data & Technology strategy. The total budget for the delivery of all initiatives is \$16,755,931.

Proposed funding includes:

- In-kind contributions of \$4,008,375
- Smart Cities grant funding of \$9,999,893
- Application and receipt of pending Fed Dev Ontario funding of \$2,747,663

The project budgets have been structured to ensure successful delivery of all initiatives using only Smart Cities Challenge grant funding and in-kind contributions. INFC Challenge funds will be used to leverage both public-sector and private-sector funding to increase the breadth and scale of the projects and to create long-term sustainability for the work.

We are starting this work by looking at the ongoing sustainability of the Our Food Future Smart City initiative. While this is a five-year initiative, we have scoped the projects such that incremental staff funding is heavily loaded into the early years and then largely eliminated at the end of year four. Creating change of this scale requires people with the specific knowledge and skills to design and execute these Pathfinder projects, alongside data and technology experts, while continuing to engage our residents. By year five of this initiative, we expect that the results of our system-level and project-level interventions will have been “proven out” and can be regularized into the operational delivery systems of each of our partners and collaborators, and that circular economy principles will be embedded in their work. At the municipal level, for example, our economic development, waste management, IT departments, etc., would have integrated the benefits of this work into their delivery systems, policies and infrastructure.

8.1 Comprehensive budget with detailed breakdown of projected revenues and expenses

We have categorized standard financial cost categories in accordance with definitions typically used in project budgeting (salaries, travel, materials, and supplies, etc.) as provided by INFC.

- Hard costs typically refer to cost of physical construction including labour, materials, fixed equipment, etc.
- Soft costs typically refer to fees, insurance, permits, taxes, certification, movable equipment, etc.
- Direct costs typically refer to costs that relate directly to the project.
- Indirect costs typically refer to costs that go beyond the expenses associated with the particular project such as overhead, management, day-to-day operations of the organization, etc.

Accordingly, Smart Cities Office staff is categorized as an indirect cost, while all other staff will be considered direct costs.



8.2 Methods, sources and assumptions

Each of the project budgets were developed by a leadership team of Project Delivery Partners, along with municipal staff, data and technology subject matter experts, and consultants with a range of sectoral knowledge. The methodologies used to establish costs within the project budgets included:

- Building labour expense budgets based on the proposed staffing and comparable existing positions within various organizations
- Drawing on the knowledge of subject matter experts in the fields of information technology, solid waste, carbon credits, project management, engagement, marketing, social services and economic development
- Identifying total hours required by deliverable/initiative
- Historical information on the delivery of projects similar in size and complexity

8.3 Contributions from other sources and approach to leveraging revenues

8.3.1 In-kind contributions

In addition to the funding received from Infrastructure Canada, the City of Guelph and its partners have committed in-kind contributions to ensure successful delivery of the initiatives.

As outlined in the budget details, in-kind support totals over \$4M, while in-kind supports as identified through the Letters of Support — not included in the budget details — total \$2.8 M; this includes a significant in-kind contribution from the partnership between the Helderleigh Family Food Literacy Research program and the Guelph Family Health Study, which will study correlations between food literacy levels and dietary intake.

8.3.2 Leveraging other government funding

A Fed Dev Ontario grant application is currently under development (to be submitted March/19) to seek funding in the amount \$2,747,663 under the Community Economic Development and Diversification (CEDD) pillar to augment Smart Cities and in-kind funding. This funding will be used expand the scale and capacity of the Circular Jobs & Business Workstream projects (CFE iHUB & the Harve\$t Impact Fund), along with our data and technology strategy.

Additional applications are nearing completion to meeting the Province's April 5 deadline for submission to the [Canadian Agricultural Partnership](#) (the Partnership) program. Funding will also be sought from the City of Guelph's Efficiency, Innovation and Opportunity Fund Reserve, at up to \$100,000/year for a total of up to \$500,000.

8.3.3 Leveraging private-sector funding

When we are successful in receiving the INFC Challenge Funding, we are poised to begin private-sector fundraising efforts. We have purposefully chosen to fully develop our vision with our community and stakeholders and to define the projects before seeking private-sector partnerships, sponsorships and funding contributions.

We plan to develop a **Private-Sector Partnership Sponsorship Prospectus**, outlining the opportunities for participating in each of our projects. Collaborators such as the [Circular Economy Leadership Coalition](#), whose members include Unilever Canada, IKEA Canada, Loblaw



Companies Limited, Walmart Canada and NEI Investments LP, have committed to assist with fundraising efforts (see Letters of Support in Appendix A).

In addition, preliminary surveys, interviews and letters of support from venture capital funds such as Umai Global, Yield Labs and Highline BETA indicate that the Harve\$T Impact Fund & Financing Ecosystem approach will enable us to leverage additional funds to support ongoing sustainability.

8.4 Financial tools and accounting methodologies

The City of Guelph currently utilizes JD Edwards (JDE) software for recording all financial transactions of the corporation. All expenses and revenues related to the Smart Cities initiatives will be recorded in JDE.

The City of Guelph will maintain separate record and documentation for the grant funding and keep all records, including invoices, statements, receipts and vouchers in respect of funds expended on eligible project costs.

All financial data will be prepared in accordance with generally accepted accounting principles (GAAP) in effect in Ontario. GAAP will include, without limitation, those principles approved or recommended for local governments from time to time by the Public Sector Account Board or the Canadian Institute of Chartered Accountants or any successor institute, applied on a consistent basis.

In addition, an annual external audit is conducted on the consolidated financial statements of the City of Guelph. The audit is planned and performed to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

8.5 Identification of risks and development of appropriate mitigation strategies

According to the governance structure established for Our Food Future (Chapter 5), quarterly financial reporting will be provided to the steering committee as part of a comprehensive status report.

Upon approval of the Smart Cities funding, project budgets will be refined to allow quarterly variance reporting. This reporting will include the following metrics:

- Life-to-date expenses
- Commitment
- Life-to-date budget
- Variance

Any variance between the planned and actual expenses will be flagged for review by the steering committee and an action plan will be immediately developed and implemented to bring the expenditures back in line with the budget plan.

8.6 Secretariat/Advisory Council

In formalizing our approach for the application phase of our initiative, we designed a secretariat governance structure that consists of a transitional advisory board, a steering committee and workstream tables (Chapter 5). As proposed in our preliminary application, funds were allocated to this function.



9.0 Implementation phase requirements

9.1 Duty to consult with Indigenous groups and modern treaty obligations

Acknowledging our Indigenous foundations. The County and the City are located on the ancestral Indigenous lands of the Attawandaron people and the treaty lands and territory of the Mississaugas of the Credit. The County and the City recognize our important relationships with our neighbours the Anishinaabe, Haudenosaunee and Métis communities. We recognize the specific treaty areas covered within Guelph and Wellington, namely, Treaty 3: Between the Lakes Purchases, Treaty 4: Crown Grant to the Six Nations or Haldimand Tract, Treaty 29: Huron Tract Purchase, Treaty 19: Ajetance Purchase, and Treaty 45 ½: Saugeen Tract Purchase.

As described in Chapter 6, engagement is a key part of Our Food Future — engagement that includes actively listening to Indigenous residents and neighbours. The long-standing traditions of stewardship of the land, including soils, water, plants, and animals, will form a foundation of respect for the management of natural resources.

We need to think of engagement as a process rather than a single act. The role of engagement is to improve the decision-making processes, promote understanding of the issues at hand, propel reconciliation into action and strengthen relationships. Indigenous perspectives add value in a number of ways, including providing new approaches from their cultural perspective, identifying pitfalls or gaps in current thinking and raising issues not previously considered.

In order to ensure that consultation is genuine and meaningful, the process must involve gathering information to test policy proposals, putting forward proposals that are not yet finalized, seeking Indigenous stakeholder opinion on those proposals, informing Indigenous stakeholders of relevant information upon which those proposals are based, listening with an open mind to what Indigenous stakeholders have to say, being prepared to alter the original proposal and providing feedback both during the engagement process and after the decision process. There are number of values that must underpin engagement, including mutual respect, reconciliation, collaboration, effective working partnerships, reciprocity, reliability and relationships.

As a good governance practice, the City of Guelph is developing a Notification Protocol for the purpose of engaging with Indigenous groups. The aim of the Protocol will be to move the City further along the path to reconciliation by providing City staff with guidelines on the appropriate processes for providing Indigenous groups with notification when City policies, issues and engineering, planning and environmental services projects have the potential to impact upon Indigenous groups in the Guelph area.

9.2 Community Employment Benefit (CEB)

We have identified three target groups, with a specific focus on women and youth in each, that will benefit from Our Food Future:

- newcomers (specifically women and youth)
- small and medium enterprises (SMEs)

- social enterprises

9.2.1 Newcomers

With a diverse economy of small, medium and large commercial, industrial and service organizations, as well as government and educational institutions, Guelph-Wellington attracts new Canadians as well as migrants from across the province and country.

Our Newcomer pilot targets new Canadians in the north end of Guelph, one of the city's most ethnically diverse neighbourhoods and one of its poorest. As noted in Chapter 6, we will identify the food needs of this group, grow this food on the University of Guelph urban farm, and provide farming skills to newcomer women and youth. As a result, this population will have access to nutritious, culturally appropriate food that might not otherwise be available or affordable.

How they will benefit

This project will increase food security in the North Guelph area, creating greater access to produce (foods not as readily available through food banks). It will also increase access to ethnic and culturally specific foodstuffs that are either difficult to find or unaffordable.

Via the On-Farm Apprenticeships each summer, we will teach students, with a focus on girls in grades 5 and 6 from new Canadian families how to grow food in this climate, building capacity within this demographic.

Some of food they grow will help support the neighbourhood breakfast club and teen drop-in events, while another portion will be sold at the local community centre. These apprentices, in turn, will support and teach participants in the local community garden program how to get good yields; how to make soil out of compost; how to harvest, prepare and foods so that there is produce year-round; and how to save seed.

Collecting, managing and tracking data

We will collect the following data:

- Hours worked by our on-farm apprentices
- The number of people using the Food Bank during the growing season
- The change in demand for certain Food Bank items
- The changes in the cost of running the Breakfast Program and Community Garden

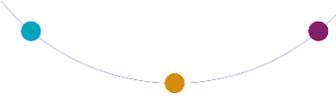
We will also survey our target group prior to the launch of the pilot (early April 2019).

Reporting

We will report our progress in meeting these CEB targets in accordance with federal and provincial reporting requirements.

9.2.2 Small and medium businesses and social enterprises

Our CFE iHub will contribute to the creation of companies, collaborations and technologies that represent the greatest social and economic value in the context of the circular food economy.



Many of these will be small and medium businesses and social enterprises (with focus on not-for-profit, BCorp and Indigenous-led enterprises).

Through the development of the CFE iHub, our goal is to create high value and impact for all companies and collaborations, ensuring that each is properly capitalized to realize its full potential for impact and/or economic value.

Across sectors and within vertical markets, the CFE iHub will jump-start organizations on a one-on-one basis and provide support on challenges and opportunities. Among other things, we will help small and medium businesses:

- generate ideas
- discuss challenges and surface solutions
- strengthen and accelerate projects

This will also help develop new procurement processes, sharing research, challenges, opportunities as well as outcomes.

Small and medium businesses and social enterprises will also benefit from our Harve\$t Impact Project. This circular fund and finance ecosystem can be used as a mechanism to ensure that a range of businesses develop, social goals are supported and measured and successes are expanded upon. The ideal end result of this work is a healthy stream of projects with clear paths to appropriate funding and financing. Impact results from projects will attract more funding and generate further impacts.

The first demonstration project funded through the Impact Fund will create new social enterprises that offer employment opportunities for youth not currently in employment, education or training.

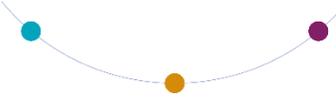
Collecting, managing and tracking data

Data will be collected through our procurement agreements as well as through our performance measurement strategy (Chapter 2), which includes tracking outputs related to participation and engagement in the iHub and the Harve\$t Fund. Tracking who is engaged, by organizational type, will allow us to assess whether our CEB targets are being met and where more targeted outreach is needed.

Our focus on B-Corps adds a secondary emphasis on Community Employment Benefits, since the B-Corp certification process requires demonstration of hiring and procurement policies that provide greater opportunities for under-represented groups. As well, the Harve\$t Fund platform includes the development of an Impact Assessment that will track each fundee's contribution to economic, social and environmental good. Data will be managed through our technology platform (Chapter 4).

Reporting

We will report our progress in meeting these CEB targets in accordance with federal and provincial reporting requirements.



9.3 Climate Lens Assessment (CLA)

The primary focus of Our Food Future is not climate change adaptation, resilience, disaster mitigation or a reduction in GHG emissions. As such, it does not require a Climate Lens Assessment per s.1.3 of [Climate Lens – General Guidance](#).

However, we do note that Our Food Future will create a number of climate-related benefits, such as:

- Reducing transport-related carbon emissions by increasing access to local food
- Reducing methane emissions in landfill by increasing organic waste diversion
- Increasing resilience to climate change by strengthening local food production
- Increasing renewable energy options by transforming “waste” byproducts into renewable natural gas

Furthermore, our initiative aligns with City of Guelph sustainability goals in the following ways:

- The City of Guelph’s Community Energy Initiative (CEI) contains ideas and initiatives to make changes to the way we produce and consume energy resulting in:
 - Reduced energy costs
 - A strong local economy
 - A resilient and healthy community
 - A more prosperous, sustainable, and equitable future

The CEI gave rise to the establishment of a community-based Task Force called “Our Energy Guelph” (OEG) in 2016. OEG has recommended that Guelph become a net zero carbon community by 2050. This target is aligned with community vision, provincial planning timelines and emerging international trends in target setting, providing the shared sense of responsibility across government and community required for positive change.

Our Food Future contributes significantly to achieving this community vision by facilitating food waste reduction and thus reducing the GHG created by food waste consigned to landfill. In addition, converting food waste into biomass energy or alternate energy fuels will limit the need for other energy sources that produce GHG emissions. These initiatives will greatly enhance the community’s local economy, reduce energy costs, build a more resilient and healthy community, and ultimately provide a more prosperous, sustainable and equitable future.

Appendix A: Letters of Support

The table below summarizes our letters of support. The letters themselves will be sent as a separate attachment.

Sector	Contribution	Impact
<p>Agri-Foods</p> <ul style="list-style-type: none"> • Canadian Agri-Food Policy Institute • Precision Strategic Solutions • Provision Coalition • Umai • Wellington Brewery 	<p><u>Pre-Application:</u></p> <p>Leadership support, knowledge and staff expertise during application development. Although the value of this support is difficult to quantify, over 50 hours in staff resources from each key partner was devoted to attend Steering Committee, Joint Workstream meetings, and sub-committee meetings. In addition, staff time from individual organizations was contributed outside of meetings</p> <p><u>Post-Application (Next 5 Years):</u></p> <p>In-kind contribution accumulated value of \$121,000</p>	<p>Our initiative will expand the networking opportunities with other companies to share best practices for reducing food waste. It will support processors and manufacturers understanding of the true cost and value of preventing avoidable food waste in operations.</p>



Sector	Contribution	Impact
<p>Business Services</p> <ul style="list-style-type: none"> • Alectra Inc. • Biomimicry • Centre Wellington Chamber of Commerce • Circular economy Leadership Coalition • CFDC – Wellington Waterloo • Highline Beta • ICLEI (Local Governments for Sustainability) • Innovation Guelph • Long View • MaRS • Ontario Agri-Foods Technology • Public Sector Network • Toronto Board of Trade • Workforce Planning Board 	<p><u>Pre-Application:</u></p> <p>Leadership support, knowledge and staff expertise during application development. Although the value of this support is difficult to quantify, over 50 hours in staff resources from each key partner was devoted to attend Steering Committee, Joint Workstream meetings, and sub-committee meetings. In addition, staff time from individual organizations was contributed outside of meetings</p> <p><u>Post-Application (Next 5 Years):</u></p> <p>In-kind contribution accumulated value of \$65,000</p>	<p>Our initiative will promote business growth that supports environmental sustainability. It will build opportunities for collaborations between policy makers and corporates including building networks of partners interested in achieving ambitious smart cities visions, strategies and goals.</p>





Sector	Contribution	Impact
<p>Community</p> <ul style="list-style-type: none"> • 10 Carden (10C) • Business Centre Guelph-Wellington • Guelph Community Health Centre • Food 4Kids Guelph • Guelph Neighbourhood Support Coalition • Helderleigh Foundation • Public Health Ontario (PHO) • Second Harvest Food Rescue • TasteReal • Toward Common Ground • Wellington-Dufferin Guelph Public Health • YMCA-YWCA Guelph • Yorklands Green Hub 	<p><u>Pre-Application:</u></p> <p>Leadership support, knowledge and staff expertise during application development. Although the value of this support is difficult to quantify, over 50 hours in staff resources from each key partner was devoted to attend Steering Committee, Joint Workstream meetings, and sub-committee meetings. In addition, staff time from individual organizations was contributed outside of meetings</p> <p><u>Post-Application (Next 5 Years):</u></p> <p>In-kind contribution accumulated value of \$1,476,200.</p>	<p>Our initiative will support circular food endeavours of local organizations that will contribute to educating consumers on living healthy, yet affordable, lifestyles. This will be achieved, in part, through the development and sharing of tools to improve health outcomes. In addition, it will provide a larger network to share information and practices across jurisdictions.</p>



Sector	Contribution	Impact
<p>Institution (Research & Education)</p> <ul style="list-style-type: none"> • Arrell Food Institute • Conestoga College • Guelph Family Health Team • IDEO • Smart Prosperity Institute • University of Guelph • Upper Grand District School Board • Wellington Catholic District School Board 	<p><u>Pre-Application:</u></p> <p>Leadership support and knowledge and staff expertise during the development of the application. Although the value of this support is difficult to quantify, over 50 hours in staff resources from each key partner was devoted to attend Steering Committee, Joint Workstream meetings, and sub-committee meetings. In addition, staff time from individual organizations was contributed outside of meetings</p> <p><u>Post-Application (Next 5 Years):</u></p> <p>In-kind contribution accumulated value of \$1,179,000</p>	<p>The project will enable data and research to be conducted on food behaviours that can be carefully shared with other researchers. This data and subsequent analysis can help inform researchers and policy makers in the development of education programs, policy, and health care programs that will support healthy lifestyles. This will contribute significantly to incorporating healthy living practices within the education system.</p>
<p>Government</p> <ul style="list-style-type: none"> • County of Wellington • Queensland, Australia – Guelph’s Sister City • Waterloo Wellington LHIN 	<p><u>Pre-Application:</u></p> <p>Leadership support, knowledge and staff expertise during application development. Although the value of this support is difficult to quantify, over 50 hours in staff resources from each key partner was devoted to attend Steering Committee, Joint Workstream meetings, and sub-committee meetings. In addition, staff time from individual organizations was contributed outside of meetings</p> <p><u>Post-Application (Next 5 Years):</u></p> <p>In-kind contribution accumulated value of \$6,000</p>	<p>The information gathered from the research and program development undertaken by the various sectors will inform governments and health networks in the creation of new government programs and supports that will foster healthier communities. The new technologies will enable governments to share data, research, and other best practices on a larger scale for quicker dissemination of information.</p>