sustainable kingston

Best Practices and Policy Recommendations

Final Report

December 6, 2011

This report forms a component of the sustainability planning and policy study for the City of Kingston by the SURP 825 Environmental Planning Project Course Team under the supervision of Dr. Graham Whitelaw. It has been produced in cooperation with the City of Kingston Sustainability & Growth Department. The submission of this report and related project components have been undertaken by the students of environmental planning in the partial fulfillment of a Master of Planning (M.Pl.) from the Queen's University School of Urban and Regional Planning (SURP).

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project overview

The Environmental Planning Project Course Team from the Queen's University School of Urban and Regional Planning (SURP) has partnered with the City of Kingston to produce the following set of sustainable best practices for potential implementation in Kingston. The overarching aim of this project, *Sustainable Kingston: Best Practices and Policy Recommendations*, is to build upon the existing work of FOCUS Kingston and provide the background, framework, and rationale to support the vision: "Kingston - Canada's Most Sustainable City."

The ultimate goal of this project is to suggest policies that simultaneously:
- build on the *Sustainable Kingston Plan* and the 4 pillars of economic, social, cultural, and environmental sustainability, and;
- endorse physical and mental health, support changing demographics, and encourage diversity

The World Commission on Environment and Development (WCED) defines sustainable development as "meet[ing] the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Plans developed for cities like Kingston, Ontario should reflect an appropriate balance of the competing and complementary values inherent in this statement (Berke, 2002).

Within the realm of planning, sustainability, intergenerational equity, and responsibility are closely linked with the promotion of healthy,

active communities. The built environment is comprised of individual elements within the cities where we live, work, and play (Frumkin et al., 2004). These elements include, but are not limited to, houses, schools, stores, streets, and parks (Frumkin et al., 2004). Decisions about how these elements are organized impact the physical, mental, and social well-being of the public as well as the environment in which we live (Dannenberg et al., 2003). This report will demonstrate how a community that encourages a healthy lifestyle through land use planning has the capacity to improve its economic, social, cultural, and environmental landscape (MMAH & OPPI, 2009).

methodology

Sustainable Kingston: Best Practices and Policy Recommendations consists of four main components:

- An inventory of existing sustainability initiatives conducted to identify gaps in policies and potential for improvement. This informed;
- A selection of best practices in sustainability and policies for their implementation from both national and international cities which are adaptable to Kingston;
- An interim workshop with discussions and feedback generated on selected best practices;
- A final workshop presenting a policy implementation tool-kit to members of the community

The inventory aims to supplement the Community Action Inventory located on the *Sustainable Kingston* website. To do so, the inventory acts as a working document and will allow initiatives to be added as they are established and developed. The Project Team used this inventory to assess where possible policy gaps occur in the *Sustainable Kingston Plan*. The following are the

Sustainable Kingston categories in which we found the greatest room for additional initiatives: EC1: Economic Development; EC2: Community Economic Development; EC3: Labour Market Development; CU3: Active Citizenship; EN2: Water; and EN3: Solid Waste.

After completing the inventory, the Project Team held a facilitated workshop to engage local stakeholders in the task of realizing sustainability in Kingston. During the workshop, we presented 16 best practices in sustainability for critical discussion as a launching-off point for generating other ideas. At the end of the workshop, stakeholders were asked to participate in a transparent voting exercise known as dot democracy. Through this process, they identified which of the best practices, amongst all of those presented and brainstormed, they considered most relevant for Kingston. The Project Team relied on both the dot democracy exercise and a team brainstorming session after the workshop to refine a final list of the best practices to be put forth for recommendation.

Since the interim workshop, the Project Team has compiled further research on a final set of 15 best practices in order to evaluate their potential for implementation in the City of Kingston. The evaluative policy criteria considered feasibility and ease of implementation, barriers to implementation and solutions experienced in other jurisdictions, municipal departments required, community partners, potential success indicators, and other cities with similar or complementary policies in place. We have also considered how these best practices will fit within a broader policy framework including provincial and federal priorities and requirements.

The Project Team's final recommendations were presented at a culminating workshop on December 6, 2011 at Kingston City Hall. Participants in this workshop were asked to return a comment form on which they selected six best practices they considered to be

feasible, relevant, and a priority for implementation in the City of Kingston. The Project Team envisions that the City of Kingston will consider these 6 best practices as desirable to many community actors and will consider their implementation in the development of future plans and policies.

best practices and policy recommendations

There are several policy areas that contribute to the long range sustainability of a city's populations, demographics, and health. The best practices recommended below have been organized in four policy focus areas: built environment, transportation, community programs and initiatives, and environmental services.

Policies centered on the built environment focus on how the design of buildings, streets, and public spaces shape our behaviours, attitudes, and perceptions. Mixed-use communities, high density development, and innovative built form all have the ability to encourage active living, interpersonal relationships within the community, and economic prosperity. Transportation policies can be integrated into new developments or can leverage existing connections to move people in new ways. The policies suggested here look at people, cyclists, public transit, and cars. Social programs and policies are integral components of a vibrant and dynamic community. They rely on the creation of services and entertainment for citizens that go beyond the physical form of the city. Finally, environmental services not only supply society with fundamental needs such as water, energy, waste disposal, and recreation, but can endorse economic development and social cohesion. Though Canada boasts abundant natural resources, effective environmental management will become increasingly important in coming generations as these resources face increased pressures.

The following are brief descriptions of the 15 best practices recommended for implementation in Kingston:

built environment

Smart Growth Development Plan (Yellowknife, NWT)			
economic	environmental	cultural	social
short-term	medium	long-term	

The popularity of "smart growth" planning has created increased awareness and understanding of the environment, energy conservation, healthy communities, changing demographic trends, and responsible fiscal management. Smart growth characteristics include compact and walkable communities, vibrant downtowns, active transportation, mixed-use developments, accessible natural areas, and a strong sense of place.

Introduced in the City of Yellowknife, the Smart Growth Development Plan is a long-term growth and development strategy that integrates sustainable planning and development principles. The Plan generated a Development Incentive Program By-law which promotes the construction of energy-efficient buildings, brownfield remediation, residential density, and heritage preservation. Kingston could use this program to encourage initiatives such as a housing strategy to promote affordable housing and the adoption of LEED Silver Certification as a minimum target for new municipal buildings.

Making Secondary Suites Easier (Victoria, BC)			
economic	environmental	cultural	social
short-term	medium	long-term	

A secondary suite is a private, self-contained unit within an existing dwelling. They are seen as a good way to allow seniors

to 'age in place' and can make homeownership more affordable for first time buyers and new Canadians (CMHC, 1999). Enabling secondary suites is recognized as one of the most cost effective ways for municipalities to provide affordable rental housing (CMHC, 1999). In Kingston, the rental vacancy rates are very low and affordable housing stock it not readily available (SHS Consulting, 2011).

Kingston has an opportunity to use the creation of its new comprehensive zoning by-law to encourage the development of secondary suites (SHS Consulting, 2011). Based on the new provincial Bill 140, the City of Kingston is required to enact policies that allow secondary suites. However, it is still within the City's control to foster the best possible conditions for the creation of these dwellings. The City can encourage secondary suites by eliminating parking requirements and keeping mandatory unit size flexible and reasonable.

Flex Housing™ (London, ON)			
economic	environmental	cultural	social
short-term	medium	long-term	

Through innovative design and forethought, Flex Housing™ allows homes to be easily and economically reconfigured to match the changing needs of homeowners. Pre-wiring and the proper placement of load-bearing walls and plumbing enables the homeowner to easily add and remove secondary suites, alter interior room layouts, and integrate mobility assistant tools such as grab bars. Young families are able to receive rental income with the addition of a second suite and then remove it when they require more space. Seniors and others with mobility constraints can remain and age in their community by reconfiguring their homes so that all their dwelling needs are on the first floor.

One way to encourage this is to amend the Official Plan to add a

special definition to permit Made-to-Convert homes, as was done in London, Ontario. The City of Kingston can also play the role of champion through educating developers and the public.

Sustainable Streetlights			
economic	environmental	cultural	social
short-term	medium		long-term

Powering and maintaining a streetlight network is a large expenditure for municipalities and also accounts for a significant portion of any city's greenhouse gas emissions. In addition, excessive outdoor lighting can affect the natural rhythms of plant and animal life and has been indicated as a source of stress for urban dwellers (Dick, 2011). For these reasons it is sensible to use the best technology available to reduce energy consumption and minimize the ecological impacts of outdoor lighting. At the same time, it is important to maintain a street lighting network that promotes a safe transportation for residents.

A sustainable streetlight policy in Kingston could follow the guidelines presented by the International Dark Sky Association (IDA) and the Illuminating Engineering Society of North America's (IES) model lighting ordinance. Kingston should consider retrofitting streetlights with LED or solar-powered LED technology and choosing alternative energy sources when new streetlights are installed.

transportation

Pedestrianization of McMaster University Campus (Hamilton, ON)			
economic	environmental	cultural	social
short-term	medium		long-term

Pedestrianization is the restriction of vehicle access to a street in favour of pedestrian-friendly modes of transportation

(Iranmanesh, 2008). The act of pedestrianizing space improves physical and mental health, reduces greenhouse gas emissions and creates a pedestrian safe environment (MMAH & OPPI, 2009). The pedestrianization of Queen's University main campus is appropriate because the vast majority of students, staff, and faculty commute to Queen's by means other than single-occupancy vehicles. McMaster University in Hamilton, Ontario recently pedestrianized its campus.

McMaster has: implemented bicycle repair and sharing programs; blocked access for single occupancy vehicles (excluding public transit, service, and emergency vehicles); connected all pedestrian pathways for cyclists and walkers; illuminated pathways; and implemented a safe walking program for its students and faculty (College Sustainability Report Card, 2011).

Community Access Bicycles (CAB) (Kitchener, ON)			
economic	environmental	cultural	Social
short-term	medium		long-term

Bike-sharing programs promote active transportation, are economically inclusive, and add to the vibrancy of a city's culture. They can also raise awareness for cyclist safety and reduce the use of personal automobiles for short trips. An affordable bike-share program can enhance social inclusion and diversity within a community while improving users' overall physical health.

While it may not be practical for a mid-sized city like Kingston to implement a large-scale bike-share program (i.e. BIXI in Montreal, Toronto, and Ottawa), it can benefit from an adaptable small-scale model. The Community Access Bicycles (CAB) program in downtown Kitchener, Ontario offers 36 bicycles at 7 locations and the bicycles are available for up to 24 hours at a

time (Oldridge, 2011). Seven local businesses host the bike racks and members are charged a fee of $15 per year (Tait, 2011).

Residential Parking System (Edmonton, AB)			
economic	environmental	cultural	social
short-term	medium		long-term

Residential parking systems aim to curb on-street parking in high-traffic neighbourhoods by demanding that all vehicles parked on the street have a permit. In Edmonton, Alberta, a residential parking system was established to ensure that parking space is always available to residents in areas of high on-street parking. The program is free to all participants. By limiting parking, the program encourages the use of public transit, car-pooling, walking, and cycling.

Kingston City Council has approved a pilot residential parking system program to operate in Sydenham District, between King, West, Clergy and William Streets. The City of Kingston could launch a pilot program in the "student ghetto."

Cycling Public Awareness & Incentives Campaign (Portland, OR)			
economic	environmental	cultural	social
short-term	medium		long-term

A city-wide Cycling Public Awareness & Incentives Campaign is a strategy to encourage bicycling, especially for trips under 5 km. The Campaign would employ education efforts, the dissemination of information and services, safety enforcement strategies, and marketing to encourage Kingstonians to consider bicycling as a safe, convenient, and sustainable transportation mode. The Campaign would be implemented through soft policies that aim to affect behavioural change by informing and educating existing and potential cyclists and those that share the

road with them (Santos et al., 2010). The programs target children, women, immigrants, seniors, and other demographics and encourage personal wellness through bicycling for all ages, ethnicities, and economic classes. As such, these programs promote diversity and equalize access to sustainable transportation options while setting a foundation for vibrant mixed-use neighbourhoods (Portland Bureau of Transportation, 2009).

The Campaign would be complementary to Kingston's installation of bicycle infrastructure. These improvements can be promoted through the Campaign in order to familiarize residents with their purpose and encourage their safe and frequent use in order to maximize the City's investment.

community programs & initiatives

Sustainability Screening Report (SSR) (Canmore, AB)			
economic	environmental	cultural	social
short-term	medium		long-term

Through the Sustainability Screening Report (SSR) process, developers are asked to explain the net environmental, social, and economic benefits of their project as they relate to community sustainability. SSRs must be submitted by prospective developers and accepted by Council prior to any development application being submitted (Town of Canmore, 2011). The developer presents the report to Council after which the public is invited to ask questions or make comments (Town of Canmore, 2011). The planning department provides the SSR checklist, which includes specific questions in different categories. SSR is a flexible tool that could be used to promote particular priorities and general sustainability goals.

Implementing an SSR process in Kingston could encourage developers to consider innovative ways their projects could contribute to the City's sustainability goals. Currently under Ontario planning law, it is not permissible to refuse to accept a development application; however, it is possible to require pre-consultation before applications can be submitted. The SSR process could be included at the pre-consultation stage.

Social Media in Municipalities (Edmonton, AB)			
economic	environmental	cultural	social
short-term		medium	long-term

The City of Edmonton is a pioneer of social media and has used it effectively to improve communications with its citizens. Before the implementation of social media, its government was perceived as being non-responsive and non-communicative with citizens. Since the implementation of social media, not only have they amassed a substantial audience, but turnouts to council meetings, voting, and public events have increased. Employees of the City have cited increased conversation, engagement in issues, increased trust and 'humanization' of the organization, increased ability to gauge support for ideas, and greater overall transparency.

Kingston has an opportunity to leverage social media towards generating enthusiasm and engagement within the community. Although there is no official municipal Facebook page, the unofficial Kingston Facebook page has over 600,000 friends, providing strong indication that there is a demand to be involved.

Ciclovia (Bogotá, Columbia)			
economic	environmental	cultural	social
short-term		medium	long-term

Ciclovia originated in Bogotá, Columbia, where 70 miles of streets are closed to vehicle traffic from 7am to 2pm every Sunday. People replace cars and streets become paved parks where people can walk, bike, dance, and skate. Ciclovia promotes active transportation, provides space for citizens to exercise, and provides the foundation for community building and the formation of social connections.

A growing number of Canadian cities have adopted Ciclovia under different names, as in the City of Hamilton's Open Streets event and the City of Vancouver's LiveStreets. This idea has already been implemented to a certain extent in Kingston through the annual Princess Street Promenade. However, this event is focused on shopping rather than active transportation. While sponsorship opportunities for companies and a retail component can exist, the primary focus should be active and healthy public streets. For example, the City could invite members from local yoga studios and gyms to run public outdoor classes.

Waterfront Programming: Urban Beach (Paris, France, etc.)			
economic	environmental	cultural	social
short-term		medium	long-term

Waterfronts can bring life and vibrancy to a city. Though developing a waterfront and establishing recreational facilities is a long-term and costly process, there has been a trend toward establishing quick and temporary public spaces and events to celebrate these spaces. One of the best examples of this is Paris Plage on the banks of the Seine in Paris, France. The waterfront, normally cut off from pedestrians, is transformed into an urban beach complete with sand, deckchairs, palm trees, and a programme of recreational activities. The physical set-up takes 5 days and only one day to disassemble. This programme allows city residents who cannot escape the heat of the city to take a vacation close to home and creates a fun and vibrant public space in the heart of the city (Project for Public Spaces).

Kingston's waterfront is one of the city's major assets. The City has made many steps toward rehabilitating the waterfront and creating several well-used spaces. However, many waterfront areas in the downtown core could be transformed with temporary structures and events. Such a festival could attract tourists, increase foot traffic to downtown businesses, and encourage active use of the waterfront pathways and parks system.

environmental services

Integrated Community Energy Solutions (ICES) (N. Vancouver, BC)			
economic	environmental	cultural	social
short-term	medium		long-term

Integrated Community Energy Solutions (ICES) are gaining in popularity among Canadian municipalities as a means of organizing and providing clear direction for energy efficiency goals. This approach considers community energy management holistically; it integrates multiple sectors and involves concepts such as clean energy, low-impact building design, transportation demand management, and compact, mixed-use development (Causley, 2011).

ICES projects often begin with an energy mapping project of an entire community in order to establish baseline data. These numbers can then be used to set ambitious but realistic long-range reduction targets. A Community Energy Plan (CEP) is often created, outlining goals and specific initiatives. Through this process, the City of North Vancouver outlined goals of reducing greenhouse gas emissions by 80% by the year 2050 and reaching carbon neutrality by 2107. It has been estimated that if all of Canada's communities implement ICES projects, national greenhouse gas emissions could be reduced by 12%,

resulting in savings of up to $29 billion by the year 2050 (M.K. Jaccard, 2010).

ICES projects take on many different forms depending on the opportunities and resources available to a community. Kingston has already undertaken a number of initiatives that could contribute to ICES, such as the greenhouse gas emission inventories from 2000 to 2006. An ICES project, including the development of a Community Energy Plan, could provide a more streamlined process and better focus for such projects. It would allow for efficient monitoring of energy consumption and emissions trends in response to actions taken.

Pervious Pavement			
economic	environmental	cultural	social
short-term	medium		long-term

Stormwater management (SWM) is a major concern in Kingston on account of the aging combined sewer system in and the large proportion of impervious surfaces in the downtown core. Impervious surfaces force rainwater to run directly into nearby storm drains and then into lakes and streams, carrying pollutants picked up along the way. Many studies have linked water quality degradation to high levels of impervious surfaces in urban areas.

Pervious pavement allows percolation of stormwater through its surface and into the soil underneath. The soil naturally filters the stormwater and removes pollutants. Pervious pavements can be substituted for traditional pavements in many situations including: driveways, low-traffic roads, fire lanes, emergency access roads, parking areas, and sidewalks. The cost of pervious pavement is typically 10-15% higher than traditional pavement, but has the potential to create synergistic benefits for natural resource systems. Kingston could ensure that new sidewalks and parking lot retrofits in the downtown are paved

using permeable materials.

Household Hazardous Waste and Electronic Waste Collection			
economic	environmental	cultural	social
short-term	medium		long-term

The City of Kingston's household hazardous waste (HHW) disposal is limited and the City does not currently offer electronic waste (EW) collection. HHW includes paints, pesticides, propane tanks, batteries, syringes, used motor oil, and cleaning products. Electronic waste is comprised of old computers, monitors, speakers, televisions, etc.

The City of Toronto has emerged as a leader in both HHW and EW collection. There are 7 depots across the city that accept HHW drop-offs. They are generally open 6 days a week, often outside of regular business hours. In addition, Toronto has recently started offering EW collection with regular garbage pickup and holds 'Community Environment Days'. On these days, City staff set up temporary depots so residents can conveniently drop off HHW and EW. Kingston's goal should be to make it simple and convenient for residents to discard unwanted items.

1.0 the project

1.1 overview

This final report is the culmination of research completed by the Queen's University School of Urban and Regional Planning (SURP) Environmental Planning Project Team, in cooperation with the City of Kingston. The aim of this project, *Sustainable Kingston: Best Practices and Policy Recommendation*, is to build on the existing work of FOCUS Kingston in order to review international best practices for mid-sized cities and to compile and review policy options for the City's consideration.

The *Sustainable Kingston Plan* (2010) provides the background, framework, and rationale to support the vision of "Kingston - Canada's Most Sustainable City." The ultimate project goal is to provide a policy framework that builds on the *Sustainable Kingston Plan* and the Four Pillars of Sustainability with best practices that consider environmental and social factors, endorse physical and mental health, support changing demographics, and encourage diversity. The Project Team has compiled a comprehensive inventory of existing sustainability initiatives in Kingston (see Appendix 1 for the Survey of Existing Sustainability Initiatives within the City of Kingston) and completed a scan of innovative best practices from international municipalities (see Appendix 2 for Scan of International Best Practices: Summary Profiles). A multi-stakeholder interim workshop was also held where the best practices were discussed and feedback provided. With this stakeholder input, 15 final best practices were selected for further research and analysis of policy options for implementation by the City of Kingston.

Collecting the inventory of existing sustainability initiatives in Kingston was an informative and useful exercise and allowed us to determine what efforts have been undertaken to foster livability in the city. It allowed us to identify policy focus areas where we could improve balanced demographics, physical and mental health, and a diverse population. Our scan of mid-sized cities, on both an international and national scale, helped to define the spectrum of activities that governments conduct to inject vitality and promote sustainability in their communities. The workshop brought together various stakeholders within the City to validate and generate additional ideas and best practices related to the four focus areas: built environment, transportation, community programs & initiatives, and environmental services. Feedback generated from these discussions was incorporated to inform the next phase of our research and enable us to delve into details of policy and implementation of the selected best practices.

Four Pillars of *Sustainable Kingston*

To evaluate the potential of each of these best practices for implementation in Kingston, we used evaluative criteria to consider their feasibility and ease of implementation, barriers and solutions experienced in other jurisdictions, the municipal departments and community partners required, potential success indicators, and exemplary cities with similar or complementary policies in place. We have also considered how these best practices will fit within a broader policy framework including provincial and federal priorities and requirements.

1.2 sustainability & healthy communities

1.2.1 why plan for sustainability?

In *A Trail across Time: American Environmental Planning from City Beautiful to Sustainability*, Thomas Daniels (2009) traces environmental planning back to the mid-19th century, where remediating the deteriorating living conditions of cities in the wake of industrial development and populations surges were at the forefront of planning concerns. Since then, planning concerns have somewhat changed, with a shift in focus towards managing our limited natural resources. This new paradigm in sustainable planning has seen planners become much more concerned with maintaining our existing quality of life going forward.

The World Commission on the Environment and Development (WCED) defines sustainable development as "meet[ing] the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). We have evidently become much more aware of our finite resources and our ability to manage them effectively. However, planners have a responsibility to simultaneously maintain a functioning, stable economy and a healthy, clean environment. Sustainable planning cannot consider the environment alone. In reality, we are all part of the environment; a healthy, diverse, well-designed community will lay the foundation for a stable and thriving environment, economy, culture, and society. We would do a great disservice to both current and future generations by ignoring these elements of sustainability. The most integral theme of this report is to ensure that we maintain a balance between environmental, economic, and social values in our community activities (Berke, 2002). Plans developed for cities such as Kingston, Ontario should reflect an awareness of these sometimes competing, sometimes complementary values (Berke, 2002). The Project Team kept this theme of integration in mind while searching for best practices for Kingston's consideration.

Balancing these values, accommodating our natural systems, and protecting our future generations has to begin somewhere. Within the realm of planning, sustainability, intergenerational equity and responsibility are closely linked with the promotion of healthy active communities. Being healthy and active is both a function of the individual and the community. The built environment and the action of its citizens are interdependent and a strong focus on compact, diverse, and vibrant city-centres helps to lay the foundation for values that reduce damage to our natural surroundings (MMAH & OPPI, 2009).

1.2.2 planning for healthy communities

Historically, city planning and public health share common roots, with many planning initiatives stemming from health-related concerns (Frank & Engelke, 2001). The link between the built environment and health was discovered with unsanitary, overcrowded conditions facilitating the transmission of communicable air and water borne diseases (MMAH & OPPI, 2009). In fact, ill health is part of the reason planners developed sprawling suburbs in the first place: to separate industrial and residential uses and thereby promote public health (MMAH & OPPI, 2009). Unfortunately, this separation of land uses has contributed to current levels of non-communicable chronic diseases, including obesity, cancer, coronary heart disease, and Type II diabetes (MMAH & OPPI, 2009).

Since 2006, the Ontario Professional Planners Institute has placed special importance on planning for healthy communities (MMAH & OPPI, 2009). Many academics and professionals have conducted a

wealth of research and published literature on the topic. These studies suggest that the built environment has a significant bearing on the physical, mental, and social well-being of individuals and even of whole communities.

Source: *PLANNING BY DESIGN*: a healthy *communities handbook* (MMAH & OPPI, 2009)

The built environment is the combination of individual elements within the cities where we live, work, and play (Frumkin et al., 2004). These elements include, but are not limited to, houses, schools, stores, streets, and parks (Frumkin et al., 2004). The urban form of our cities is spatially organized through land use and transportation planning. Planners make decisions about how to manage our land and resources and set goals about how communities will grow and develop (Bergeron, 2009). These choices impact the physical, mental, and social well-being of the public as well as the environment in which we live (Dannenberg et al., 2003). It follows that good urban form must be functional, economically and environmentally sustainable, and livable in ways that promote healthy communities (Horton, 2007). More simplistically, this translates into complete and connected sidewalks and cycling lanes and mixed-use development that brings where we live closer to where we work and play.

Low density, single land use patterns reduce the opportunity for active transportation, stimulating increased time spent in vehicles, reducing physical activity, and increasing greenhouse gas emissions (Frank et al., 2006). Research has shown that the risk of

obesity increases by 6% for every hour spent in a car each day; this risk is reduced by 5% for every kilometer walked each day (Heart and Stroke Foundation, 2010). The comparison between prevalence of physical inactivity in Denmark (16.3%) and Canada (46.9%) demonstrate the impact that healthy built environments can have on a population (WHO, 2000; 2003).

The BC organization "Smart Growth" found community design and health to be closely linked to smarter land use and development planning. They found spin-off benefits in:

- Physical activity and obesity
- Mental health
- Social health
- Air quality
- Traffic safety
- Noise levels
- Water quality
- Energy savings
- Cost savings
- Community economic development

Public policy interventions targeted at improving regional mobility, traffic congestion, and air quality could also generate substantial physical and mental health benefits through increased levels of moderate physical activity among the public (Frank & Engelke, 2001). The Project Team has conducted research to gather 15 best practices, which together have the potential to build a more comprehensive health-promotive environment in Kingston.

2.0 the methodology

2.1 guiding principles

The overarching project vision aims to integrate our guiding principles[1] with the objectives of the City of Kingston:

To foster livability in the City of Kingston by identifying best practices and policy options built on a platform of economic, social, cultural and environmental sustainability. The project recommendations will address divergent needs within the community and set the stage for Kingston to become "Canada's most sustainable city."

This vision is supported by five guiding principles. A short description of each informs the reasoning behind each selection:

integration

The first guiding principle focuses on developing interrelationships between the Four Pillars of *Sustainable Kingston* and fostering connections in planning for the components of a healthy, livable community. This means avoiding unnecessary trade-offs and compromises in planning for one Pillar at the expense of another.

adaptation

The practice of change management and the appreciation of uncertainty will also inform policy selection. Options and actions should be adaptive and able to respond to how the understanding of sustainability, a community, and its needs may evolve over time.

intergenerational equity

Policies and best practices will not be chosen based on a short-term vision, but rather to preserve or enhance the opportunities and capabilities of future generations to live sustainably. This means planning for multiple generations in order to increase the equitable distribution of benefits among them.

resilience

Initiatives and methods of implementation will be identified that will aim to ensure community self-sufficiency and self-reliance in meeting present and future needs while increasing the community's ability to adapt to shocks or disturbances.

vibrancy & sense of place

The project will also explore land use planning options and actions that result in a vibrant downtown core and neighbourhoods. This could mean employing increased density, mixed-uses, and connectivity to contribute to a community and neighbourhood character and identity.

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[1] The articulation of the Guiding Principles is informed by concepts and discussions in Gibson, R.B. (2006). Beyond the pillars: sustainability assessment as a framework for effective integration of social, economic and ecological considerations in significant decision-making, *Journal of Environmental Assessment Policy and Management, 8*(3), 259-280 and Lehmann, S. (2011). Transforming the city for sustainability: the principles of green urbanism, *Journal of Green Building, 6*(1), 104-113.

2.2 the framework

The visual below outlines how the various goals and aims of *Sustainable Kingston: Best Practices and Policy Recommendations* link together to inform this report:

The project consists of four main components:

- An inventory of existing sustainability initiatives conducted to identify gaps in policies and potential for improvement. This informed;
- A selection of best practices in sustainability and policies for their implementation from both national and international cities which are adaptable to Kingston;
- An interim workshop with discussions and feedback generated on selected best practices;
- A final workshop presenting a policy implementation tool-kit to members of the community

In order to organize the project and prevent overlap, the Project Team examined various national and international sustainability organizations to gain a broad understanding of the spectrum of current world-wide best practices. After completing the inventory of Kingston's existing sustainability initiatives, an analysis was done to identify strengths, weaknesses, and gaps in the City's approach and specific best practices were selected for more detailed study.

The selected best practices and related policies have been grouped into four focus areas: Built Environment, Transportation, Community Programs & Initiatives, and Environmental Services (including water, waste reduction, and energy). This delineation will ensure policies are created for the entire spectrum of community needs. Each best practice has been vetted by various stakeholders in the interim workshop and 15 best practices have been selected with associated policies proposed through which they may be implemented.

Each of the selected best practices has been thoroughly researched by examining the policy context that has made the practice possible in its local implementation. A variety of factors have been looked at for each policy strategy. A multi-level evaluation tool was employed to ensure consistency and comprehensiveness to the extent that information is readily accessible for readers.

Policy Analysis Evaluative Criteria
Feasibility
Success Indicators
Barriers to Implementation
Other Successful Cities
Policy Champions
Jurisdictional Concerns/Broader Policy Framework
Departments Required & Community Partners
Policy Tools: Materials/Output/Policy Documents/By-laws

Feasibility

This criterion will refer to the practical implementation of the policy, meaning the level of difficulty that can be expected in order to successfully implement the policy. Feasibility also generally refers to the amount of resources required (i.e. funding and staff hours).

Success Indicators

This refers to the level of success experienced in the host city. If available, quantifiable statistics will be presented in addition to general community engagement and qualitative feedback.

Barriers to Implementation

It is important to note any challenges with policy implementation in host cities to ensure strategies take into account any potential hurdles or contingencies.

Other Successful Cities

A list of other cities that have implemented the practice will be outlined for reference.

Policy Champions

If there were one or two passionate people in the community that jumpstarted the best practices, it will be noted. This includes who they were, how they initiated the practice and promoted its reception within the municipality.

Jurisdictional Concerns / Broader Policy Framework

If there are any questions as to whether the policy is under the discretion of the Provincial or Federal government, this will be explored. Tools at the disposal of the municipal government in key areas will be noted.

Departments Required & Community Partners

This criterion will address how silo-busting can result in individual departments working together towards a common goal and will also note community involvement in policy implementation and program development.

Policy Tools: Materials/Output Policy documents/By-Laws

Any document tools that were used to communicate the best practice, such links to a *Sustainability Screening Report* or energy maps will be gathered for reference to act as an implementation tool-kit.

Together, these evaluative criteria will create a comprehensive tool-kit for City employees. They will provide a guide for implementation and will facilitate Kingston's transition to becoming "Canada's most sustainable city."

2.3 the interim workshop

2.3.1 rationale

The Project Team held a facilitated workshop entitled "*Sustainable Kingston*: International Best Practices" on October 19, 2011 at the Portsmouth Olympic Harbour Press Lounge in Kingston. The workshop represented an opportunity to engage local stakeholders in the discussion of realizing sustainability in Kingston and how the City may endeavour to achieve its vision of becoming "Canada's most sustainable city." Stakeholder input was sought to determine community interest and gather input on a series of identified international best practices in sustainability, their potential contribution to the City's goals as identified in the *Sustainable Kingston Plan*, and the feasibility of their implementation under local conditions. These workshop objectives were designed after an

examination of the inventory of existing sustainability initiatives in the City of Kingston. A discussion of 16 best practices under the policy focus areas of the Built Environment, Transportation, Community Initiatives and Programs, and Environmental Services followed in order to touch on all aspects of a healthy community.

2.3.2 stakeholders

Stakeholders were identified by the Project Team in collaboration with the City of Kingston Sustainability & Growth Department (see Appendix 3 for Stakeholder Invitation Package & Consent Form). The selection of invited stakeholders was based on the relevancy of their organizations to the implementation of sustainability in Kingston and the breadth of their community interests and services representing economic, environmental, cultural and social concerns.

2.3.3 workshop format

The workshop began with a plenary presentation during which members of the Project Team introduced the *Sustainable Kingston Plan*, the City's vision for sustainability in Kingston, and the Four Pillars of Sustainability by which it is organized (see Appendix 4 for Interim Workshop Presentation Slides). Stakeholders were then introduced to the Project Team's comprehensive inventory of existing sustainability initiatives in Kingston and a set of best practices compiled through an international scan of successful policies, programs, and initiatives. These best practices are exemplars of concrete ways in which to foster community livability with special consideration of environmental and social factors, demographics, physical and mental health, and supporting a diverse population. In order to stimulate consideration and discussion later in the workshop process, stakeholders were presented with highlights of existing initiatives in Kingston that the Project Team related directly to themes and goals found in the

Sustainable Kingston Plan. The stakeholders were supplied with the working inventory of existing sustainability initiatives in Kingston and asked to identify any missing initiatives through comment forms.

Built Environment Breakout Station – October 19, 2011

Following instructions for the interactive component of the workshop, stakeholders were divided into small groups which rotated between four breakout stations corresponding to the aforementioned policy focus areas of the Built Environment, Transportation, Community Programs & Initiatives, and Environmental Services. At each station, a member of the Project Team introduced the policy focus area, its relation to sustainability, and discussed a series of identified international best practices presented in a poster format (see Appendix 5 for Interim Workshop Posters). These best practices were reproduced in greater detail in a booklet provided to the stakeholders. A note-taker accompanied each facilitator and recorded the conversation between stakeholders and Project Team members. Importantly, stakeholders were actively encouraged to introduce any best practices that they may have encountered in their realm of

experience and knowledge as professionals and experts in their respective fields.

After the final rotation between breakout stations, stakeholders were asked to participate in a transparent voting exercise known as dot democracy. Through this process, they would identify the best practices, both those identified by the Project Team and those introduced by fellow stakeholders, that they consider most relevant and practical for adaptation and implementation in Kingston. The stakeholder discussions of best practices in sustainability, the dot democracy process and its results, and the contribution of these workshop components to the subsequent stages of this project will be discussed further in this report.

Environmental Services Breakout Station – October 19, 2011

2.3.4 interim best practices

The following best practices were presented for stakeholder input and consideration of relevance to Kingston's local challenges and existing conditions (see Appendix 2 for Scan of International Best Practices: Summary Profiles).

Built Environment
- *Smart Growth Development Plan*: Yellowknife, NWT
- *LED Street Lighting*: Welland, Ontario
- *Green Development Program*: Caledon, Ontario
- *Form-based Zoning*: Kendall, suburb of Miami, Florida
- *Making Secondary Suites Easier*: Victoria, British Columbia

Transportation
- *Community Access Bicycles (CAB)*: Kitchener, Ontario
- *Toronto Walking Strategy*: Toronto, Ontario
- *Bus Communication Network*: Malmo, Sweden
- *Buffalo Carshare*: Buffalo, New York, USA
- *Ciclovia*: Bogotá, Colombia

Community Programs & Initiatives
- *Sustainability Screening Report (SSR)*: Canmore, Alberta
- *Landshare*: United Kingdom
- *Participatory Budgeting*: Porto Alegre, Brazil
- *Urban Beach*: Paris, France

Environmental Services
- *Household Hazardous Waste Diversion*: Victoriaville, Quebec
- *Public Spaces Recycling*: Sarnia, Ontario
- *Integrated Community Energy Solution (ICES)*: North Vancouver, British Columbia
- *Bioswales for Stormwater Management*: Seattle, Washington, USA

2.3.5 workshop conversations

Stakeholders were invited to participate in a facilitated discussion of each focus area's practices at each breakout station and generate new, innovative ideas for implementation in Kingston. A summary of the conversations that took place is provided below (see Appendix 6 for Comprehensive Workshop Conversation Summaries).

Built Environment

The conversations concerned with implementing potential best practices as they relate to the built environment covered a wide range of topics. Intensification through secondary suites was discussed with optimism that Bill 140 would be passed. On the topic of adopting LED street lighting, the Project Team learned that the City of Kingston is currently working to retrofit all traffic signals with LED lights. The ability to enforce form-based zoning was a popular discussion point. Lastly, ways to focus development and economic growth in Kingston's core as opposed to the suburbs were frequently considered. Stakeholders identified the provision of more incentives to build in the core and making greenfield development more difficult as major areas for improvement.

Transportation

Reducing vehicular traffic was a popular theme with stakeholders. People were quick to discuss car share and bike share initiatives that have been successful in other Canadian cities. A few stakeholders introduced the idea of a residential parking permit system. This would only allow residents of specified neighbourhoods to park on the street, hopefully reducing commuting by single-occupancy vehicles. A cycling awareness program was strongly supported in response to Kingston's apparent 'cars-first' mentally. Stakeholders were also interested in the

prioritization of bus signals to allow for rapid public transit and encourage its use. Finally, pedestrianizing campus received the most encouragement from stakeholders. This would limit vehicular access to buses, service, and emergency vehicles.

Transportation Breakout Station – October 19, 2011

Community Programs & Initiatives

Most discussion among stakeholders focused on Canmore, Alberta's Sustainability Screening Report (SSR). Stakeholders agreed that this program would put sustainability at the forefront of development, addressing more than just environmental concerns. Paris' Urban Beach idea also received attention. The idea of having a more interactive waterfront was the key take-away message. While many stakeholders believed that Porto Alegre, Brazil's Participatory Budgeting was not likely to succeed in Kingston because marginalized people would be left out of the process, the United Kingdom's Landshare program received

some endorsement. However, the program's structure and ensuring the City's active role were of greatest concern.

Community Programs & Initiatives Breakout Station –
October 19, 2011

Environmental Services

Workshop discussions with stakeholders showed great interest in issues of waste, water, and energy management. Victoriaville, Quebec's Household Hazardous Waste Diversion program was viewed positively. Stakeholders supported the proper disposal of electronic waste and suggested that a single program encouraging both household hazardous waste and electronic waste disposal

would be most convenient and effective. Sarnia, Ontario's Public Spaces Recycling received encouragement and sparked a discussion of expanding Kingston's existing recycling program. Integrated Community Energy Solutions received the most attention. Most supported this initiative, but cited the need for strong political will to successfully implement the program. Lastly, Seattle, Washington's bioswales were the most interesting topic of discussion. Although bioswales seem unrealistic for Kingston's stormwater management needs, greater efforts to reduce impermeable surfaces, flooding, and strains on Kingston's sewer system need to be examined.

2.3.6 the dot democracy

The dot democracy exercise was held at the end of the interim workshop. The 12 participating stakeholders were each given six dots. The Project Team asked that one dot be allocated per policy focus area and placed on whichever best practice the stakeholder felt would be a practical and realistic program or initiative to be implemented in Kingston in order to contribute to the City's sustainability goals. This was stipulated in order to ensure a balanced distribution of votes among the focus areas. Voting considerations may have included feasibility of implementation, economic or political constraints, public interest, and innovativeness. Two dots then remained to be placed on two additional best practices that stakeholders felt deserved emphasis. The voting results in each policy focus area are presented below:

Built Environment		
Best Practice	Location	Dots
Increased Incentives for Downtown Development	N/A	• • • •
Secondary Suites	Victoria, BC	• • •
Form-based Zoning	Kendall, Miami, FL	• • •
Smart Growth Development Plan	Yellowknife, NWT	• • •
Streetlight Motion Detectors	N/A	• •
LED Street Lighting	Welland, ON	•
Close Ontario Street	N/A	•
Maintain Tax Rates on Vacant Properties	N/A	•
Commercial Storefronts in Residential Areas	N/A	•
Conservation Zoning	N/A	•
Green Development Program	Caledon, ON	

Transportation		
Best Practice	Location	Dots
Residential Parking Permit System	Alberta	• • • • • • •
Public Awareness Campaign for Cycling	N/A	• • • • •
Community Access Bicycles (CAB)	Kitchener, ON	• • •
The Orange Line	Los Angeles, CA	• • •
Ciclovia	Bogota, Columbia	• •
Buffalo Carshare	Buffalo, NY	•
Pedestrian Scramble	Toronto, ON	•
No Right Turns on Reds	Toronto, ON	•
Searchable Walks Database	Toronto, ON	
Bus Communication Network	Malmo, Sweden	
Pedestrianize Campus	N/A	

Community Programs & Initiatives		
Best Practice	Location	Dots
Sustainability Screening Reports (SSR)	Canmore, AB	• • • • • • • •
Citizen Engagement through Social Media	Vancouver, BC	• • • • •
Urban Beach/Waterfront Programming	Paris, France	• • •
School & Hospital Nutrition	N/A	•
Car Pooling Program	N/A	•
Landshare	UK	
Participatory Budgeting	Porto Alegre, Brazil	
Eat Local	N/A	

Environmental Services		
Best Practice	Location	Dots
ICES	N. Vancouver, BC	• • • • •
Low-Impact Development	N/A	• • •
Bioswales for SWM	Seattle, WA	• •
Neighbourhood Energy	N/A	• •
Public Spaces Recycling	Sarnia, ON	•
District Energy	N/A	•
Rain Barrels	N/A	•
Limit Air Conditioning Use	N/A	•
Household Hazardous Waste Diversion	Victoriaville, QC	

2.3.7 selecting the final 15

In order to select 15 best practices to take into the final stages of policy analysis, the Project Team relied on both the dot democracy exercise and a brainstorming session after the workshop to refine our list. All best practices that received more than three dots were chosen for further discussion. Practices that were not feasible or applicable to Kingston's local context or had similar counterparts already in process of being implemented by the City were removed from consideration. This left us with approximately 12 best practices. To delineate additional best practices, we relied on feedback generated during workshop discussions to point to ideas that were popular amongst stakeholders, but may not have received dots due to constraints in the number of allotted votes (see Appendix 7 for Comprehensive Rationales for Best Practices Selection).

2.4   the final workshop

The Project Team's final recommendations for the implementation of 15 best practices and their enabling policy tools were presented at a culminating workshop on December 6, 2011 at Kingston City Hall. Since the interim workshop, the Project Team compiled further research on 15 best practices whose selection was determined by the Team and through stakeholder input from the aforementioned dot democracy exercise. These best practices were examined for feasibility of implementation in Kingston and their ability to address existing local conditions and challenges, while promoting sustainability and the development of a healthy community.

2.4.1 stakeholders

The final workshop sought to engage a broader audience of municipal staff, community partners, and members of Queen's University. Participating stakeholders from the interim workshop were invited back and invitations were made to a broad spectrum of community members representing a wide array of concerns and interest areas. Stakeholder input from the final workshop has contributed to the Project Team's recommendation of the 15 best practices, 6 of which are presented as prioritized for implementation.

2.4.2 workshop format

The workshop began with a plenary presentation, reintroducing the *Sustainable Kingston Plan* (2010) and its vision for a healthy community integrating the Four Pillars of Sustainability (see Appendix 8 for Open House Presentation Slides). The presentation was expanded from the interim workshop to address the impetus for planning for sustainability and healthy communities and why these frameworks are necessary in planning for today's challenges and tomorrow's future.

Presentation at Open House, December 6, 2011

The presentation discussed the Team's selection of policy criteria chosen to inform the City of Kingston about how selected programs and initiatives were developed and what resources were necessary for their successful implementation and evaluation. The Project

Team then gave an overview of 6 innovative best practices that we consider most relevant to Kingston's challenges and goals.

The open house format following the presentation invited stakeholders to engage with Project Team members in discussion about the final 15 best practices which were presented through posters (see Appendix 9 for Open House Posters). Stakeholders could make their way around the posters at their leisure, interact with one another, and consider the relevance of each best practice to Kingston. Ultimately, stakeholders were asked to return a comment form on which they selected 6 best practices they consider to be feasible, relevant, and a priority for implementation in the City of Kingston. The Project Team envisions that the City of Kingston will consider these 6 best practices as desirable to many community actors and will consider their implementation in the development of future plans and policies focused on achieving Kingston's goal of being "Canada's most sustainable city."

Stakeholders at Open House, December 6, 2011

3.0 the inventory

3.1 overview

As one of the deliverables for this project, the Project Team was asked to complete a detailed survey of existing sustainability initiatives in the City of Kingston, to supplement the Community Action Inventory that is already available on the *Sustainable Kingston* website. The highlights of the survey will be discussed below. Since the team was adding to the *Sustainable Kingston* inventory, a consistent format was used. Each initiative was broken down into four components: the action; the action lead (who is doing the action); the action target; and the status of the action.

3.2 workshop feedback

To the best of the Project Team's knowledge, the inventory represents a comprehensive survey of sustainability initiatives in Kingston compiled over the course of a month. As a result, it must be stated that some initiatives may have been overlooked. The inventory is meant to be a working document so that initiatives can be added as they are discovered and developed. The survey of existing sustainability initiatives was compiled by reviewing City of Kingston documents, including the following:

Official Plan
Accessibility Plan
Cycling and Pathways Study
Kingston Culture Plan
Kingston Transit Redevelopment Plan 2011-2015

Kingston Transportation Master Plan
Kingston's Strategic Plan 2011-2014
Municipal Housing Strategy
Parks and Recreation Master Plan
Sustainable Kingston Plan
Town and Gown Strategic Plan
Transportation Demand Management Strategy
City of Kingston municipal website

3.3 survey results

As mentioned above, some of the most interesting sustainability initiatives from around the City will now be discussed. Many progressive initiatives fell into the Economic Health (EC), Environmental Responsibility (EN), and Social Equity (SO) Pillars. Fitting into the *Theme EC 4: Infrastructure* of the EC Pillar, Kingston has created the online "My Ride Public Transit Trip Planner" where transit users can input their starting location and destination and be informed of where to go to find a bus, what bus to take, and where to walk to reach their endpoint. Kingston has also created the "Safe Step" program that aims to make the City's sidewalks more accessible.

Sustainability Initiatives Inventory screenshot

Under the EN Pillar and *Theme EN 1: Energy, Air, and Climate Change*, Kingston has completed a greenhouse gas emissions inventory and is continuously striving to make City-owned-and-run buildings more energy efficient. Under *Theme EN 2: Water*, Kingston has instituted a water restriction by-law to prevent watering of lawns and gardens during the hottest summer months. Similarly, Kingston has created the Water Conservation Garden, an educational resource that demonstrates how to garden with minimal water use and showcases drought-resistant plants. Targeting *Theme EN 3: Solid Waste*, the City implemented the Green Bin program to divert food waste from landfills. The program has been very successful so far with the City seeking to expand it to apartment buildings in addition to single-family houses. Kingston has also produced a *Pollution Control Plan*, which very broadly aims to reduce waste throughout the City. Under *Theme EN 4: Natural Areas*, Kingston completed the first draft of its *Urban Forestry Master Plan* in Summer 2011 which is currently under review following public consultation. A further City initiative incorporates natural features and natural vegetation as much as possible in the design and maintenance of parks. Under *Theme EN 5: Land Use and the Built Environment*, Kingston has created Green Building Guidelines that are intended to encourage builders to seek LEED certification for their construction projects. Kingston also has the *Brownfields Community Improvement Plan* that provides tax assistance and grants to developers who wish to build projects on contaminated sites.

Finally, with respect to the SO Pillar, and specifically *Theme SO 2: Health and Wellness*, Kingston has a Subsidy Program for Affordable Recreation in Kingston (SPARK) that provides financial assistance to those in need to increase the affordability of sports and recreation programs. Similarly, Kingston launched the "Kingston Gets Active" project, with the goal to make all Kingstonians more active in general and to increase awareness

about the benefits of physical activity. Under *Theme SO 4: Poverty and Homelessness*, Kingston offers transit subsidies for low-income residents in an effort to make public transit more affordable. Addressing homelessness, Kingston sets aside money in the municipal budget for the Affordable Housing Development Fund. Under *Theme SO 5: Safety, Comfort and Inclusion*, Kingston incorporates Facilitating Accessibility Design Standards into new projects and existing retrofits to make buildings more accessible. Lastly, in order to make parks feel safer, Kingston incorporates Crime Prevention through Environmental Design principles.

> **Major Gaps**
> EC1: Economic Development
> EC2: Community Economic Development
> EC3: Labour Market Development
> **Minor Gaps**
> CU3: Active Citizenship
> EN2: Water

3.4 gap analysis

In conducting the comprehensive survey of existing sustainability initiatives in Kingston, certain gaps became apparent to the Project Team. While best judgement was used when categorizing initiatives, some might have been mislabelled. The Team found that the highest number of initiatives could be classified under the Social Equity Pillar. Many initiatives focusing on *Health and Wellness*, *Poverty and Homelessness*, and *Comfort, Safety and Inclusion* were identified. The Pillar with the next most initiatives was Environmental Responsibility, with numerous projects targeting *Energy, Air and Climate Change*, *Natural Areas*, and *Land Use and the Built Environment*. There were significantly fewer initiatives that could be classified under the Cultural Vitality and Economic Health Pillars. It is possible, however, that initiatives focusing on these two Pillars have been promoted less or are simply less visible.

With that being said, the most apparent gaps were under the Economic Health Pillar. The Team found no initiatives that could be classified under *EC1: Economic Development*, *EC2: Community Economic Development* or *EC3: Labour Market Development*. Looking at the Cultural Vitality Pillar, we only found one initiative that could be classified under *CU3: Active Citizenship*. Finally, examining the initiatives that fell under the Environmental Responsibility Pillar, the Team found a lack of efforts focusing on *EN2: Water* and *EN3: Solid Waste*. While initiatives focusing on water and solid waste within a city are typically large in scale and labour intensive, we felt that there could be more small-scale, lot-level initiatives being promoted throughout Kingston.

3.5 inventory feedback

After presenting the survey of existing sustainability initiatives in Kingston to stakeholders at the interim workshop, the Project Team solicited feedback via comment forms attached to the inventory. Feedback was rather limited, but nonetheless valuable. The participants who did respond pointed to our lack of attention paid to public health initiatives in the City. The Project Team was able to add almost twenty sustainability initiatives to the inventory under the Social Equity Pillar *SO3: Food and Nutrition*. As mentioned above, major gaps identified fell under the Economic Health Pillar, and it is possible that the right members of the business community or economic policymakers could help to inform them.

4.0 the final 15

4.1 overview

Building on the actions proposed by the City of Kingston in the *Sustainable Kingston Plan*, the Project Team has compiled a list of best practices that will contribute to the overarching vision for the city's sustainability. As Kingston moves forward, promoting physical and mental health, balancing the needs of different demographics, and supporting a diverse population are important target goals. The best practices collected for this project aim to achieve these goals, while satisfying one or more of the Four Pillars of *Sustainable Kingston*.

In selecting the following best practices, the Project Team has chosen initiatives that range in the complexity of their implementation. While we endeavoured to select initiatives from mid-sized cities comparable to Kingston, we understand that cities of this scale often lack the resources to implement world-class sustainability efforts. However, this challenge should not restrict Kingston in its ambition to become "Canada's most sustainable city" and should not limit the City to implementing only those practices considered to be 'low-hanging fruit.' The Project Team has been mindful in the selection of large-scale best practices from larger cities and economic centres to ensure they can be realistically adapted or scaled to suit the needs and resource base of a mid-sized city. Some cities that have been identified for their best practices share commonalties with Kingston beyond size and population. In these cases, we identify the factors that have led us to suggest these policies and how they would be appropriate for Kingston.

Ensuring each best practice satisfies one or more of the Economic, Environmental, Cultural, and Social Pillars has been a fundamental component of this project. Building on this, there are several policy areas within a city that contribute to the long range sustainability of its populations, demographics, and health. Each best practice has been organized under a policy focus area in order to clearly outline which departments or agencies would be responsible for their implementation; this encompasses built form, environmental services, social programs, and transportation.

Policies focused on the Built Environment consider how the design of buildings, streets, and public spaces shape behaviours, attitudes, and perceptions. Mixed-use communities, high density developments and an innovative built form all have the ability to influence behaviour in a concrete way. The selected best practices have been chosen based on their ability to endorse active living, stronger interpersonal relationships within the community, and greater economic prosperity through the creative adaptation of built form.

Transportation policies can be integrated into new developments or can be devised to leverage existing connections and move people in new ways. The policies suggested here look at people, cyclists, public transit, and cars. The built environment and transportation practices are closely linked and make use of the existing urban form to deliver transportation solutions that will enhance the physical and mental health of the community.

Community programs and initiatives are integral components of a vibrant and dynamic community. They rely on the creation of services and entertainment for citizens that go beyond the physical form of the city. They can endorse sustainable activities for municipal employees, citizens, and business owners alike. A scan of

these policies will reveal ways in which the City can come together to create synergistic programming for the community.

Finally, Environmental Services not only supply society with fundamental needs such as water, energy, waste disposal, and recreation, but can endorse economic development and social cohesion. Though Canada boasts abundant natural resources, effective environmental management will become increasingly important in coming generations as these resources face increased pressures. A new way of delivering these fundamental services can offer mutual benefits to the city and the environment.

The final 15 selected best practices are:

- *Smart Growth Development Plan*: Yellowknife, NWT
- *Making Secondary Suites Easier*: Victoria, BC
- *Flex Housing*™: London, ON
- *Sustainable Streetlights*
- *Cycling Public Awareness & Incentives Campaign*: Portland, OR
- *Community Access Bicycles (CAB)*: Kitchener, ON
- *Residential Parking System*: Edmonton, AB
- *Pedestrianization of McMaster University Campus*: Hamilton, ON
- *Sustainability Screening Reports (SSR)*: Canmore, AB
- *Social Media in Municipalities*: Edmonton, AB
- *Ciclovia*: Bogotá, Columbia
- *Waterfront Programming: Urban Beach*: Paris France; San Diego, CA; Toronto, ON
- *Household Hazardous Waste & Electronic Waste Collection*: Toronto, ON
- *Pervious Pavement*: Chicago, IL
- *Integrated Community Energy Solutions (ICES)*: North Vancouver, BC

4.2 the best practices

4.2.1 built environment

The Built Environment policy focus area refers to the design, construction, management, and use of human-made surroundings. This encompasses everything from houses, parks, and stores to industrial plants, institutions, and streets (Hodge & Gordon, 2008). The many facets of this focus area can play an important role in establishing healthy communities. Establishing provisions for the built environment such as specific density, accessibility, and transportation planning targets can greatly affect how healthy a community can become (Northridge & Freeman, 2011). Sustainable developments that take into consideration the life cycle, environmental, and functional quality of buildings can also help to create a healthy community (Grierson, 2009).

The City of Kingston can encourage a healthy, functional, accessible, and attractive built environment through the following initiatives: providing incentives to developers for LEED-certified buildings and green technologies; using municipal funds to reduce energy consumption through light-emitting-diodes (LED) lighting; making it easier for homeowners to create secondary suites in their homes; and encouraging Smart Growth.

Smart Growth Development Plan
Yellowknife, Northwest Territories

| economic	environmental	cultural	social
short-term	medium		long-term

Overview

Smart Growth planning incorporates fundamental planning factors into long-range community decisions. The introduction of this policy in one Canadian city has created increased awareness and understanding of the environment, energy conservation, healthy communities, changing demographic trends, and responsible fiscal management. Smart Growth aims to endorse compact and walkable communities, vibrant downtowns, active transportation, mixed-use developments, accessible natural areas, and a strong sense of place.

Introduced in the City of Yellowknife, the *Smart Growth Development Plan* is a long-term growth and development strategy that integrates sustainable planning and development principles. The City of Yellowknife put the Plan into action by working together with various governmental and non-governmental partners. The Plan is divided into five main areas: Public Involvement, Land Use and Urban Design, Transportation, Energy and the Environment, and Economic Development.

The creation of the Plan required extensive public consultation through questionnaire surveys, focus groups, telephone surveys, open houses, and a community design charrette. These various consultation methods allowed for a continuous re-examination of initial ideas in order to create an integrated strategic framework. Seven consultation reports were produced and serve as important background reports for future reference. In addition, the

"Recommendations Report" was produced by the Yellowknife Smart Growth Development Committee to provide a framework for implementation of the Plan.

The City of Yellowknife hopes that the Plan and its related strategies will improve the environmental character of the community through brownfield redevelopment, protection of environmentally-sensitive areas, expansion of community gardens and green spaces, implementation of green development standards, and the improvement of active transportation efforts. It also aims to improve the City's economic situation through a mix of tax incentives, targeted investments, and neighbourhood revitalization initiatives.
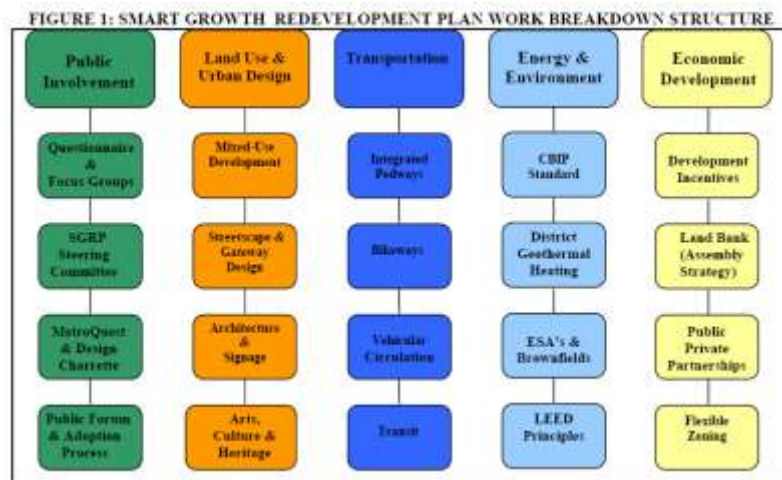
Source: Yellowknife Smart Growth Redevelopment Plan Terms of Reference (2007)

The Plan generated a Development Incentive Program By-law, which promotes the construction of energy-efficient buildings, brownfield remediation, residential density, and heritage preservation. In collaboration with the Canadian Municipal Housing Corporation, the City adopted a non-market housing strategy to promote affordable housing. The City has also made LEED Silver Certification the minimum target for all new municipal buildings and

recently evaluated the potential of a sustainable community energy system for buildings in the downtown core.

Ultimately, the main goals of the Plan are to:

- Accommodate a rapidly growing population
- Provide high quality cultural and social services
- Meet the needs of an aging population
- Provide desirable housing options for current and future residents
- Ensure that residents have convenient transportation options
- Preserve the environment
- Keep up with aging infrastructure
- Control the rising cost of living
- Maintain a healthy and robust economy
- Protect precious green spaces
- Maintain a high quality of life

Smart Growth is a strategy for citizens and decision-makers to broadly consider the impacts of future growth and development on a community over the next several decades. The *Smart Growth Development Plan* process was created to help understand the trade-offs and overall impacts of decisions relating to land use mix, density, urban design, transportation, the natural environment, and the economy. Though planning is an ongoing process, the Plan provides a holistic approach to understand the growth and development issues of a municipality and how they can be addressed to improve quality of life, fiscal health, and the environment.

Recommendations for Kingston

The City of Kingston has elements of Smart Growth already in action or in policy stage, including brownfield remediation efforts, LEED certification requirements for all new large municipal buildings, the updating of secondary suites policies, and improved transit planning. Some of the gaps that were discovered during our first workshop that relate to other areas of the *Smart Growth Development Plan* were a lack of mixed use development policies (such as ground-floor commercial and residential above) and insufficient incentives for developing in the downtown. The *Smart Growth Development Plan* is a versatile policy and can take on many forms. Provided the definition and goals of Smart Growth are followed, the City has flexibility in creating a Plan that suits Kingston's unique needs. Some of the areas that the City of Yellowknife focused on were the *Urban Design Initiative, Downtown Façade Improvement Guidelines,* a *Natural Area Preservation Strategy,* and the *Transportation Improvement Plan*. Through the extensive public consultation that the Plan requires, the City of Kingston may find that more mixed-use policies and downtown incentives are wanted by the public; the Plan can therefore focus on these policies.

Feasibility

The *Smart Growth Development Plan* is a long-term strategy for creating a sustainable city. The Plan is not a quick fix, nor a simple solution; it is a way for the City of Kingston to become a lasting sustainable city for future generations.

Barriers to Implementation

The time and resources required to implement this high-level initiative represent the largest barrier to implementing the *Smart Growth Development Plan.* Extensive public consultation, numerous consultant reports, and the establishment of a Smart Growth Committee will demand substantial monetary investment. In order to address this common barrier to implementation, the

City of Kingston will need to prioritize the Plan accordingly amongst its many departments, Council, and citizens. The Plan also has the capacity for 'silo-busting' as it must incorporate the work and cooperation of multiple departments.

Jurisdictional Concerns

Though this project was initiated by the municipal government, it also involves funding from other levels of government and community groups. It is principally maintained by the municipal government.

Departments Required & Community Partners

The creation of the Plan required the cooperation of various departments, community partners, and levels of government such as the Planning and Development Department of the City of Yellowknife, the Federation of Canadian Municipalities, Indian and Northern Affairs Canada, the Government of the Northwest Territories Department of Education, Culture and Employment and Council. In addition, a very important partner in the establishment and maintenance of the Plan is the Smart Growth Development Plan Committee.

Policy Tools

Materials/Outputs/Policy Documents/By-laws

The *Smart Growth Development Plan Recommendations* document summarizes the Plan and provides a look at how it has been successfully implemented through policy.

http://www.yellowknife.ca/Assets/Planning+and+Lands/Smart+Growth+Plan/SmartGrowthDevelopmentPlanRecommendationReport.PDF

The purpose of the Smart Growth Development Plan Committee is to advise the City regarding issues such as the formulation of policies, concepts, and strategies as they relate to the long-term growth and development of the city. The Committee is comprised of fifteen representatives from specific interest groups, the public at large, one Council Member, and the Mayor. The Committee members have dedicated considerable time and effort to establish the Plan.

http://www.yellowknife.ca/City_Hall/Committees/SmartGrowthDevelopmentPlanCommittee.html

The Municipal Plan website provides links to documents such as surveys, focus groups, workshops, open houses, and background reports:

http://www.yellowknife.ca/City_Hall/Departments/Planning_Development/SmartGrowthPlan.html

The Terms of Reference website provides a look at one of the first stages of creating the Plan and is a useful resource for getting familiar with the characteristics of Smart Growth:

http://www.yellowknife.ca/Assets/Planning+and+Lands/Smarth+Growth+Redevelopment+Plan+Terms+of+Reference.pdf

Making Secondary Suites Easier			
Victoria, British Columbia			
economic	environmental	cultural	social
short-term		medium	long-term

Overview

A secondary suite is a private, self-contained unit within an existing dwelling. It typically has a bathroom, kitchen, living, and sleeping areas but may share amenities with the main dwelling. Secondary suites are may be referred to as second units, accessory apartments, garden suites, and granny flats (CMHC, 1999). Secondary suites are a great way to increase affordable rental housing and density in urban, suburban, and rural areas. They are seen as a good way to allow seniors to 'age in place' and a favourable option for families who want elderly relatives close by to provide informal support. They can also make homeownership more affordable for first-time buyers (CMHC, 1999).

Enabling secondary suites is recognized as one of the most cost-effective ways for municipalities to provide affordable rental housing (CMHC, 1999). Often, the rents in these units are lower than in commercial apartments; unlike most other types of affordable housing, secondary suites can be developed with little governmental assistance (CMHC, 1999). In Kingston, the rental vacancy rates are very low and affordable housing stock it not readily available (SHS Consulting, 2011). Creating additional affordable housing in Kingston is seen as a major priority. As suggested above, enabling secondary suites would address the Economic and Social Pillars of Sustainability. In addition, the promotion of higher densities and intensification in already built-up areas contributes to the Environmental Pillar.

Kingston should use its new Comprehensive Zoning By-law as an opportunity to encourage the development of secondary suites in the city (SHS Consulting, 2011). Based on the new provincial legislation, Bill 140 (Province of Ontario, 2011), all municipalities in Ontario are required to enact policies allowing secondary suites in residential houses. While the City of Kingston is required to adhere to this regulation, it is within the City's control to foster the best possible conditions for the creation of secondary suites.

Kingston should use the establishment of its new Comprehensive Zoning By-law as an opportunity to encourage the development of secondary suites in the city (SHS Consulting, 2011). Based on the new provincial legislation, Bill 140 (Province of Ontario, 2011), all municipalities in Ontario are required to enact policies that allow secondary suites in residential houses. While the City of Kingston is required to follow this regulation, it is within the City's control to foster the best possible conditions for the creation of secondary suites.

The new by-law should be as permissive as possible by:

- Allowing secondary suites in the main building *or* the accessory buildings of a single-family dwelling (Province of Ontario, 2011)
- Allowing secondary suites in every area of the city and every age of dwelling
- Permitting additions and modifications to the exterior of the dwelling where it will not greatly alter the house or neighbourhood. Conversions to and from secondary suites are made easier through innovations such as Flex Housing™ design
- Eliminating parking requirements for secondary suites to allow for increase density in neighbourhoods where houses are unlikely to have space for multiple parking spots

In Victoria, the elimination of such parking requirements did not constrain on-street parking (Sikstrom, 2009). In Kingston, these changes would be complementary to the proposed Residential Parking Permit best practice.

- Keeping the requirements for unit size flexible and reasonable so the option of a secondary suite is available for as many people as possible
  Some cities have chosen to have a minimum and a maximum unit size, while others simply require that the secondary suite be smaller than the main unit of the house (CMHC, 1999).

Barriers to Implementation

There are a number of factors that should be considered while promoting the creation of new secondary suites in Kingston:

1) Addressing citizens concerns:
Opposition from residents can be a major impediment in creating a permissive environment for secondary suites (CMHC, 1999). To mitigate this, the City should raise awareness about the role of secondary suites in creating affordable housing for older citizens and young families. In addition, public consultation is a great way to address residents concerns while maximizing opportunities for affordable units. For example, in North Vancouver, public consultation determined that secondary suites were only acceptable where the owner of the property resided on-site (CMHC, 2000).

2) Making application and approvals processes for new suites simple and affordable:
Recommendations for this include: ensuring that citizens have ready access to the information they need to proceed with the approvals process and encouraging City staff to be hands-on in assisting residents with their applications (Sikstrom, 2009). The City of Edmonton has an excellent FAQ website and series of brochures to provide citizens with easy-to-understand information. Some cities,

including Edmonton and Victoria, have grant programs available for residents who wish to create a secondary suite. Victoria offers a grant for 25% of renovation costs up to $5000 (FCM, 2011).

3) Legalizing illegal suites:
One common issue when enabling secondary suites is how to treat already existing non-conforming suites. Sometimes, even where permitted, people avoid declaring these suites to avoid updating to building codes or paying the additional taxes (CMHC, 1999). It is important that the City address this to ensure that existing secondary suites are safe for inhabitants while increasing the tax base. However, this must be approached in a non-punitive way so that: 1) people willingly declare the existence of these units; and 2) upgrading and licensing them does not lead to significant rent increases. Saskatoon, Saskatchewan has done an excellent job of this through a public awareness campaign and by making careful modifications of the Building Code that allowed units to be legalized much more cheaply, without sacrificing safety and building standards (CMHC, 2000).
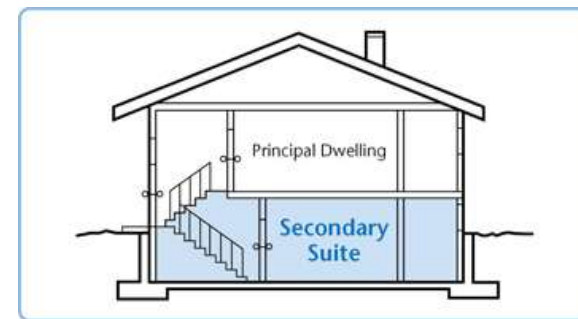
Source: City of Edmonton (2011)

Policy Tools

Materials/Outputs/Policy Documents/By-laws

The Canada Mortgage and Housing Corporation (CMHC) provides a number of affordable housing resources for municipalities.

Permitting Secondary Suites (1999)*,* describes the benefits of secondary suites in detail*.*

http://www.cmhc-schl.gc.ca/en/inpr/afhoce/tore/afhoid/pore/pesesu/index.cfm

Affordability and Choice Today (ACT) presents a number of case studies that show ways municipalities have been encouraging secondary suites.

http://www.actprogram.com/english/ProjectListing.asp?x=1&cat=21&subcat=28

The City of Edmonton has prepared an excellent FAQ website and brochures to inform citizens about the potentials and procedures for creating a secondary suite.
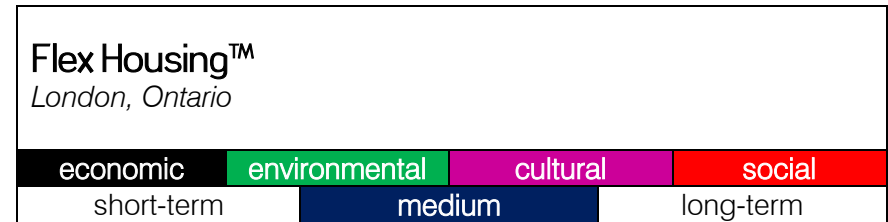
http://www.edmonton.ca/city_government/planning_development/secondary-suites-faq.aspx

Strong Communities through Affordable Housing Act (Bill 140) requires that single-family dwellings have the option of adding a second unit within the main, or in an accessory building (Province of Ontario, S.O. 2011, c. 6.).

http://ontla.on.ca/web/bills/bills_detail.do?locale=en&Intranet=&BillID=2440

Finally, health and safety concerns associated with secondary suites must be addressed with reference to the Ontario Building Code. The Ontario Ministry of Municipal Affairs and Housing (MMAH) has a website devoted to explaining the Building Code.

http://www.mah.gov.on.ca/Page7393.aspx

Flex Housing™
London, Ontario

economic	environmental	cultural	social
short-term	medium		long-term

Through innovative design and forethought, Flex Housing™ allows homes to be easily and economically reconfigured to match the changing needs of homeowners. Flexible housing is known by different names such as *Made-to-Convert* and *Convertible Homes.* Regardless of terms, the key is that they embody the characteristic of adaptability. Pre-wiring and proper placement of load-bearing walls and plumbing enable the homeowner to easily add and remove secondary suites, alter interior room layout, and integrate mobility assistant tools such as grab bars.

Young families are able to receive rental income with the addition of a second suite and then remove it when they require more space. Seniors and others with mobility constraints can remain and age in their community by reconfiguring their homes so that all their dwelling needs are located on the first floor. When greater thought is put into designing for accessibility, all people, not just those with mobility issues, will benefit.

Flex Housing™ Design Options (CMHC, "The four principles of flexible housing"):

- "Designing an attic to allow for conversion to an apartment by roughing-in bathroom or kitchen plumbing at the time of construction.
- Reinforcing bathroom walls during construction to allow for the installation of grab bars.

- Wider than usual doorways allow for greater access whether for moving furniture, carrying an armful of groceries or allowing mobility for a wheelchair or walker.
- Handrails that start before the top of the stairs and end just past the bottom to provide guidance and support."

The City of London, Ontario played a significant role in the development of 48 *Made-to-Convert* homes in a subdivision on City-owned property. To proceed with the Flexible Housing initiative, London undertook an Official Plan Amendment that added a special definition to permit *Made-to-Convert* homes. The City actively promoted the project and was able to persuade a developer to construct the subdivision even though the economy was weak at the

time. Larger cities such as Vancouver have also promoted Flexible Housing by providing City-owned land for demonstration projects.

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Flexible Housing is a developer-based design initiative that fits well into *Sustainable Kingston's* Social Pillar. While it was promoted in London and Vancouver as a means of improving housing affordability, it could be an effective way to address Kingston's changing demographics. It is projected that the population of Kingstonians aged 65 years and older will increase from 15.3% in 2006 to 28.3% in 2036 (SHS Consulting, 2011). Providing housing stock for families is adaptable to their changing needs embodies the principles of sustainability.

Recommendations for Kingston

Although the City of Kingston will not likely play the role of a developer, it can follow many of the initiatives taken by the City of London. The City's role in Flexible Housing primarily involves allowing secondary suites throughout the city and playing the role of champion through educating developers and the public.

To enable Flexible Housing, it is recommended that the City add policies to allow secondary suites in new and existing developments (see Making Secondary Suites Easier best practice).

In order to educate developers and the general public, the City should hold presentations and invite representatives from CMHC, architects, and builders to convey the benefits and expertise required to construct these dwelling types. This is a very feasible task and will not require a great deal of financial resources. The City could take a more significant role and follow the actions of London and Vancouver by providing land for a Flex Housing™ demonstration project.

Policy Tools

Materials/Outputs/Policy Documents/By-laws

CMHC has been the national leader in Flexible Housing. Further information regarding the costs involved and design considerations can be found at:

"The four principles of flexible housing"
http://www.cmhc-schl.gc.ca/en/co/buho/flho/flho_004.cfm

"Flex Housing™: Homes that Adapt to Life's Changes"

https://www03.cmhc-schl.gc.ca/catalog/productDetail.cfm?cat=17&itm=3&lang=en&fr=1322139512670

Sustainable Streetlights			
economic	environmental	cultural	social
short-term		medium	long-term

Overview

Kingston should establish and implement a policy to develop a streetlight network that works toward the goals of sustainability as outlined in the *Sustainable Kingston Plan*.

Powering and maintaining a streetlight network is a large expenditure for municipalities. Because of the quantity of energy they use, streetlights also account for a significant portion of any city's greenhouse gas emissions. In addition, excessive outdoor lighting, or light pollution, can be damaging to the natural rhythms of plant and animal life, including humans. Exposure to night-time lighting has been a source of stress for urban dwellers (Dick, 2011). For these reasons it is sensible to make use of the best technology available to both reduce energy consumption and to minimize the ecological impacts of outdoor lighting. At the same time, it is important to maintain a street lighting network that promotes safe transportation for residents, including those with vision problems, as they walk, cycle, or use motorized vehicles. For these reasons, a sustainable streetlight policy would address the Economic, Environmental, and Social Pillars of Sustainability.

Recommendations for Kingston

The following are some elements that could be included in Kingston's sustainable streetlight policy:

- Follow the guidelines presented by the International Dark Sky Association (IDA) and the Illuminating Engineering Society of

North America's (IES) model lighting ordinance which provide a guide for environmentally-responsible outdoor lighting. This includes:

→ Choosing light fixtures that shield light so it is directed downward. Such fixtures not only reduce light pollution but reduce glare, making it easier for many people, especially older residents, to see at night (Dick, 2011). The International Dark Sky Association has a list of approved streetlight fixtures that can be referred to during selection.

→ Encouraging residents and businesses to turn off lights when they are not in use and to use window covers to prevent light from spilling out of buildings.

• Create an 'Urban Sky Park' in Kingston according to the guidelines of the Royal Astronomical Association of Canada. This would showcase the efforts of the city to minimize light pollution and also provide urban dwellers with an opportunity to observe the wonders of the night sky (Dick, 2011).

• Retrofit Kingston's streetlights with LED fixtures:

→ LED lights use less than half the energy of the HPS lights that are the current norm (Rocco, 2010); they also require less frequent maintenance, and so create significant savings. Even when implemented on a small scale, switching to LED lighting can have an impressive impact. For example, in Annapolis Royal, Nova Scotia, the conversion of their 139 streetlights to LED is expected to save the town almost $14,000 per year in electricity costs, representing more than 60% reduction to this expense. This also translates to a 47 tonne reduction in greenhouse gas emissions per year (FCM, 2010).

→ LED technology is becoming the technology of choice for municipal streetlighting. It has been adopted in many

places in Ontario, including Welland and Toronto (Dan Leckie forum, 2008). It is also becoming common in cities across the U.S.; leaders include Seattle, Pittsburg, and Los Angeles (Bauers, 2010).

→ A further benefit of LED technology is its practicality in powering the fixture using alternative energies reducing overall energy consumption.

Source: http://www4.nau.edu/tribalclimatechange/tribes/images/img_HaxtonWay.gif

• Choose solar-powered LED streetlights where new streetlights are installed:

→ Because solar powered LED streetlights are self-contained, they do not need to be connected to the electrical grid. This can lower the cost of new streetlight installations and reduce the damage to nearby ecologies. These fixtures also reduce energy costs over the long and short term (Solar Daily, 2011). In addition, these light fixtures are not vulnerable to power outages and are often built to

withstand severe weather situations such as hurricane force winds (SEPCO, 2011). For these reasons, such streetlighting would improve the City of Kingston's resilience and adaptability, protecting the city's light sources in future conditions.

→ Current batteries can store enough energy to last for up to 5 nights. This means that the technology is suitable for cloudy conditions and northern latitudes. For example, solar-powered LED's have been used in the community of Dockside Green, Victoria, BC (Carmanah Technologies Inc., 2009).

→ Solar-powered LED lights are also in use along Point Frederick Drive, within the Royal Military College campus. These lights present an opportunity for learning in the City of Kingston.

→ Because the solar panels are highly visible, they get a lot of attention and can increase public awareness about renewable energies.

→ Solar-powered LEDs can be kept at a reduced light (for example 25%) and increase to full luminance when they are needed, as sensed by motion detectors (Solar Daily, 2011).

→ If resources allow, the City of Kingston could consider retrofitting existing streetlights with solar-panelled LED fixtures.

Feasibility

While a complete overhaul of Kingston's streetlight network will require significant resources, the creation of the necessary policy framework is doable in the short-term. Potential short-term implementations include choosing solar-powered LED fixtures for new projects and creating an Urban Sky Park to raise awareness about light pollution. In addition, the long-term savings of LED and

solar-powered light fixtures make it possible to argue that transitioning to these technologies makes economic sense.

Barriers to Implementation

Some possible barriers to implementing sustainable streetlight policies include:

1) *Difficulty in directly retrofitting existing light poles with new technology:*
LED fixtures provide different luminance and coverage than standard HPS lights (Rocco, 2010). For this reason, careful information gathering is necessary to ensure that the correct fixtures are chosen to provide the appropriate type and quantity of light for the required use.

2) *Challenges associated with the upfront costs of retro-fitting the city's streetlights:*
Because the use of these new technologies is expected to result in significant annual savings it may be possible to finance the capital expenditure of this project in creative ways. For example, the new parking kiosks that have been replacing parking meters throughout Ontario have often been financed from the increased revenue that they generate (Kanellakos, 2009).

3) Utilities Kingston may have existing contractual agreements with certain streetlight providers.

Policy Tools

The *model lighting ordinance* was released jointly by the International Dark Sky Association (IDA) and the Illuminating Engineering Society of North America (IES), and presents a guide for environmentally-responsible outdoor lighting. *The model lighting ordinance* can be accessed from the IDA website through

the links below. The IDA website also contains many other useful resources including a list of light fixtures that have been given the IDA 'seal of approval.'

Materials/Outputs/Policy Documents/By-laws

http://www.darksky.org/index.php?option=com_content&view=article&id=622

http://www.ies.org/PDF/MLO/MLO_FINAL_June2011.pdf

The following article provides a good case study overview of the potential capabilities of solar LED streetlight technology:

http://www.solardaily.com/reports/Solar_LED_Lights_Illuminate_Three_Miles_Of_Lummi_Nation_Pathway_999.html

The *Guidelines for outdoor lighting in urban star parks* from the Royal Astronomical Society of Canada can be viewed at:

http://www.rasc.ca/sites/default/files/RASC_USP_GOL2011.pdf

Source: MMAH (2009)

4.2.2   transportation

Enabling people to move freely through a city without compromising the air quality, natural environment, and public spaces is a significant challenge for any community. In the past, it was thought that building highways to improve automobile flow was the key to addressing city problems. Experience has shown that this approach has led to increased car traffic and subsequent social and environmental costs. Today many urban theorists argue that striking a balance between transport infrastructure *and* place-making should be at the forefront for all competitive cities (Cervero, 2009). Furthermore, Canada's aging population puts even greater importance on offering travel options for those whose driving ability is restricted.

The City of Kingston has the unique potential to embrace and promote sustainable modes of transportation due to its physical size, compact downtown, and population largely comprised of university students, visiting tourists, active seniors, and urban professionals (City of Kingston, 2003). In searching for Transportation best practices that may help Kingston reach its potential, the Project Team aimed to find sustainable practices that reduce car travel, allow people to engage in active modes of transportation, and minimize environmental degradation. The goal is to give Kingstonians the resources, programs, and infrastructure needed to engage in more sustainable modes of mobility.

<table>
<tr><td colspan="4">

Cycling Public Awareness & Incentives Campaign
Portland, Oregon, USA

</td></tr>
<tr><td>economic</td><td>environmental</td><td>cultural</td><td>social</td></tr>
<tr><td colspan="2">short-term</td><td>medium</td><td>long-term</td></tr>
</table>

Overview

A city-wide Bicycling Public Awareness & Incentives Campaign is an encouragement strategy that supports the consideration of bicycling as a realistic alternative to vehicular transportation, primarily for short trips under 5 km. The Campaign would include education efforts, dissemination of information and services, safety enforcement strategies, and marketing to encourage Kingstonians to consider bicycling as a safe, convenient, and sustainable transportation mode. Through this campaign, riders can gain confidence and experience, allowing them to maximize the number of trips they take by bicycle, in more varied settings (Portland Bureau of Transportation, 2009). Ensuring appropriate behaviour on the road by both drivers and cyclists can help reduce conflicts and garner community support for bicycling as a viable transportation option.

Portland, Oregon's *Bicycle Plan for 2030* (2009) names bicycling as a fundamental pillar of Portland's fully integrated transportation system and vision for a healthy community. The Plan's *Programs to Support Bicycling* are presented as a vital component of bicycling infrastructure projects and are made up of comprehensive promotional, educational, and encouragement strategies. The programs target children, women, immigrants, seniors, and other demographics and encourage personal wellness through bicycling for all ages, ethnicities, and economic classes. As such, these programs promote diversity and equalize access to sustainable transportation options while setting a foundation for vibrant mixed-

use neighbourhoods and business districts whose bicycling culture represents a civic commitment to share the road (Portland Bureau of Transportation, 2009).

Portland's programs are focused on providing services, influencing behaviour changes, promoting awareness, and providing incentives for bicycling. Select innovative programs include:

1) Services: cater to the needs of cyclists on the road and increase safety and convenience for potential and current riders
   - Events and rides calendars, maps, information, and trip planning resources via an interactive website serving as a main internet portal for local cyclists, at tourist information centres, etc.
   - Accessible, automated trip planning service with emergency roadside assistance for flat repair.
   - Bicycle and accessories donation and education on urban cycling programs for low-income residents.

2) Behaviour Change: testing, adoption, and expansion of programs aimed at promoting long-term changes in transportation habits
   - *SmartTrips* program which caters to private residents, businesses, schools, and new residents; reaches up to 30,000 households and provides updates on transportation information such as bikeway networks, bicycle shop locations, changes to relevant traffic laws; provides a transportation options kit for use in employee orientation; employs transportation options ambassadors who can meet and address individual business, school, or household needs.

- *Bicycle Commute Challenge*/large-scale encouragement events over one-month periods; include a workshop and progress tracking on a web-based trip diary.
- Group cycling activities for new residents, children, women, and seniors on three-wheeled bicycles encouraging empowerment in transportation and health decisions.

3) Awareness: programs and activities that inform residents how to bike safely, comfortably, conveniently.
- Sunday Parkways – healthy physical activities in local parks and streets linking a network of parks through streets that are closed to vehicles.
- Visibility campaigns – public service announcement campaigns via billboards, bus/transit ads, TV and radio spots, media coverage.

4) Incentives: focused on commuting and energy efficiency.
- City offers employees the opportunity to earn an additional $38/month for bicycling to work for 80% of all scheduled workdays; matches transit subsidy.
- *Understanding Barriers to Bicycling* – City partners with community organizations targeting diversity and equity in order to understand cultural and economic barriers to bicycling.

These initiatives have contributed to the reduction of Portland's carbon emissions, improved traffic congestion and air quality, and enhanced overall public health. These results, in combination with a general reclamation of the public right-of-way as an equitable space for multiple users, have contributed to an improved sense of livability in Portland. Its bicycling culture and commitment to an integrated program of public education, incentives, and public infrastructure have made Portland the US center of research,

teaching, and planning for sustainability (Portland Bureau of Transportation, 2009).

In 2009, one-quarter of all daily trips taken in Portland were by bicycle. Its world-renowned bikeway network and associated public programming have resulted in Portland's platinum status as a *Bicycle Friendly Community* given by the League of American Bicyclists. The City's *SmartTrips* program has reduced single-occupant driving trips by almost 9% since 2003, and in 2008, over 1,000 employers and 10,000 commuters participated in a bicycle commuting challenge (Portland Bureau of Transportation, 2009).

Source: *Portland Bicycle Plan for 2030* (2009)

A Cycling Public Awareness & Incentives Campaign can be rationalized under Kingston's Four Pillars of Sustainability. The Campaign could contribute to the reduction of carbon emissions by replacing short distance vehicle trips which have the highest emission rates (Santos et al., 2010). The Campaign would promote social inclusion by equalizing transportation options for those who cannot access a vehicle and could allow disadvantaged households more access to destinations, including those critical for employment opportunities and basic services (Santos et al., 2010). Programs and services can be tailored to meet the needs of diverse cultural groups, including the aging population and new Canadians. Lastly, bicycling can reduce costs to individual employers if replacing fleet vehicles with fleet bicycles for short trips. Support of the local economy could be gained through an expansion of bicycle tourism

and production and retails sales industries (Portland Bureau of Transportation, 2009).

Portland's *Bicycle Plan for 2030* (2009) presents bicycling as a legitimate transportation mode fundamental to developing a healthy, sustainable community. Bicycling promotes safer streets through safety in numbers; as more people ride, cyclists gain experience and drivers increase their awareness of them. Broadly, bicycling reduces causes of climate change by realizing carbon emissions reduction goals. It can also limit the causes and health care costs related to obesity and provide residents of varying demographics with a more equitable, accessible, and affordable transportation option. Finally, bicycling promotes interaction between neighbours, strengthens awareness of one's surroundings and provides "eyes on the street", all contributing to a more livable, vibrant community and the active use of the public realm (Portland Bureau of Transportation, 2009).

Recommendations for Kingston

Existing Initiatives

Currently, the promotion of cycling through education and safe cycling awareness is delivered through external community organizations that offer courses in bike safety and maintenance, membership and partner discounts, and safety tips online. These community partners include *Cycle Kingston*, the *Kingston Bicycle Advisory Committee*, and the *Kingston Coalition for Active Transportation*. The resources available to these organizations would be broadened by a stronger partnership with the municipality, allowing them to increase the extent of their existing outreach programs and lead new initiatives modelled after successful pilot programs in Portland that can be made implementable through the support of the City of Kingston.

The Campaign would be complementary to existing City initiatives in physical bicycle infrastructure. Currently, the City is in the process of installing "sharrows" which promote on-road awareness of roadsharing between drivers and cyclists (City of Kingston, 2011). Council-approved parking amendments will accompany these cycling upgrades to accommodate changes to the road way. Designated cycling lanes are planned for installation beginning the summer of 2011 through 2014 across the City, including the exploration of paving selected rural road shoulders to extend the cycling network north of Highway 401 (City of Kingston, 2011). These infrastructure improvements can be promoted through the Campaign in order to familiarize residents with their purpose and encourage their safe and frequent use in order to maximize the City's investment.

Feasibility

The City of Kingston's current investment in bicycling infrastructure would be supported and complemented by a campaign for the encouragement and incentivizing of bicycling. The Campaign would ensure that the use of existing and forthcoming public infrastructure projects including bike paths and bicycle parking would be maximized by educating residents on bicycling safety, sharing the road, and increasing the level of

Source: *Portland Bicycle Plan for 2030* (2009)

safety, comfort, and confidence residents associate with bicycling in Kingston. Education, incentives, and enforcement of safe roadsharing will promote the City's efforts in integrating bicycling

as part of Kingston's vision for sustainable transportation, provide desired services to existing cyclists, and encourage new riders to capitalize on infrastructure improvements as they become available. The Campaign would help to build public momentum and support of bicycling which would hopefully increase public support and allocated funding for the expansion of bicycle infrastructure. It would also be complementary to the proposed Bike Share pilot program and the Kingston Transit *Rack and Roll* program. Together, bicycling infrastructure, awareness, and incentives can compel residents to change their travel behaviours.

Barriers to Implementation

The following barriers to the successful implementation of a Cycling Public Awareness & Incentives Campaign should be considered and addressed as necessary during project planning and delivery:

Residents may perceive cycling as high-risk or experience fear of bicycling in an urban environment. Lack of bicycling infrastructure creates a disincentive to commute by bicycle, especially when cyclists must make left turns or are faced with interruptions in bicycle lanes (Santos et al, 2010). This barrier highlights the importance of integrating individual policy measures and transportation modes in order to avoid prioritizing the needs of one mode over another.

The availability of funding will also significantly affect the quality and extent of the Campaign. The City of Portland has developed strategies for project delivery including the development of project implementation criteria to guide future project selection which are weighted to meet specific targets. Furthermore, the City recognizes the importance of flexibility of plans and policies in responding to changing conditions such as waxing or waning public support and unexpected funding sources. To this end, the City of Portland has

developed a gradient for project implementation that ranges between moderate, high, and world-class levels that represent different cost investments of service and project delivery (Portland Bureau of Transportation, 2009).

In order to ensure the equitable distribution of programming, it is necessary to identify disadvantaged or underserviced groups and areas through a gap analysis. The City of Portland uses the '80 percent' implementation strategy which focuses on spreading funding widely so that most residents are close to bikeways (Portland Bureau of Transportation, 2009). This strategy can be adapted to public awareness and incentives campaigns by disseminating funding equitably across initiatives that target diverse demographics.

Lastly, residents may be unfamiliar with how to use specific infrastructure, which will hinder its maximized use. This barrier also requires an integrated approach in the delivery of infrastructure projects and complementary programs that can educate the population on their appropriate use. For example, in 2008 Portland installed experimental bike boxes at targeted intersections, complemented by well-coordinated education and enforcement efforts. Buses and billboards advertised the forthcoming bike boxes and instructional signs were placed at intersections prior to their installation to raise both driver and cyclist awareness and prepare users to react appropriately once installed. Police first enforced the bike boxes through educational pamphlets prior to issuing tickets (Portland Bureau of Transportation, 2009).

The Campaign would be implemented through soft policies that aim to affect behavioural change by informing and educating existing and potential cyclists and those that share the road with them (Santos et al., 2010). In order to maximize the effectiveness of the Campaign, policymakers should conduct studies of what drives

residents' behaviours in their specific local context. Then, these behaviours and their motives can be targeted through advertising and information programs.

Jurisdictional Considerations

While there are no jurisdictional restrictions that would impede the City of Kingston from implementing a Cycling Public Awareness & Incentives Campaign, there may be opportunities to collaborate with regional, provincial, and federal partners (Portland Bureau of Transportation, 2009). For example, the City may wish to implement and locally expand existing tax incentive programs for bicycle commuters.

Departments Required & Community Partners

The following City departments and partners contributed to the development of the *Portland Bicycle Plan for 2030* (2009): City Council; Bureau of Planning & Sustainability; Bureau of Transportation; designated Project Team; Steering Committee (representatives of key municipal and community partners including advisory committees, neighbourhood groups, public health organizations, transportation councils); Technical Advisory Committee (municipal bureaus or departments); volunteers.

Policy Tools

The intent of bicycling policy in Portland is to entrench citizen aspirations for the City's future in implementable strategies, communicate those aspirations to the agencies responsible for putting policies into actions, and to provide the basis for regulating these activities within the City (Portland Bureau of Transportation, 2009).

The following policy excerpts from the City of Portland's plans and policies may be consulted for the intent and appropriate language through which to prioritize and support bicycling programs in Kingston.

Portland Transportation Systems Plan (2006): Policy 6.23 Bicycle Transportation
"Create conditions that make bicycling more attractive than driving for trips of three miles or less (p.38)."

This policy endeavours to make the bicycle an integral part of daily life by implementing a bikeway network, providing end-of-trip facilities, improving bicycle/transit integration, encouraging bicycle use, and making bicycling safe (Portland Bureau of Transportation, 2009).

Portland Comprehensive Plan (2006): Goal 6 Transportation, Policy 6.3 Transportation Education
"Implement educational programs that support a range of transportation choices and emphasize safety for all modes of travel (p.43-44)."

This policy is supported by a series of existing and proposed objectives that promote the increase of bicycle safety education, enforcement, and outreach to encourage safe travel behaviour; safe bicycling to and from school; and the continued expansion of encouragement programs that provides services and equipment, support behaviour changes, raise awareness, and provide

Source: *Portland Bicycle Plan for 2030* (2009)

incentive that increase bicycling in Portland (Portland Bureau of Transportation, 2009, Appendix B-2).

Materials/Outputs/Policy Documents/By-laws

Portland Bureau of Transportation (2009). *Portland Bicycle Plan for 2030.*

ftp://ftp02.portlandoregon.gov/PBOT/Bicycle_Plan_for_2030/Plan_Documents/Complete_Plan/Portland_Bicycle_Plan_for_2030_as-adopted.pdf

Portland Bureau of Planning (2006). *Portland Comprehensive Plan.* pp.43-44.

http://www.portlandonline.com/bps/comp_plan_goals_policies_complete.pdf

Portland Bureau of Transportation. (2006). *Portland Transportation Systems Plan.* p.38.

http://www.portlandonline.com/transportation/index.cfm?c=52495&a=370467

Community Access Bicycles (CAB)
Kitchener, Ontario

economic	environmental	cultural	social
short-term	medium		long-term

Overview

Kitchener's pilot program, Community Access Bicycles (CAB), is a small-scale bike-sharing program located in downtown Kitchener. There are a total of 36 bicycles at 7 locations in the area and the bicycles are available to members for a maximum of 24 hours at a time (Oldridge, 2011).

After completing research on the many different types of bike-sharing models, policy champion Pete Oldridge (2011) decided on the manual system, as it is far more inclusive and provides more utility to the user with looser time restrictions. Oldridge then began looking at what kind of funding options would be available through City grants, finally landing on the *Local Environmental Action Fund* (LEAF) grant. Before applying for the grant, Oldridge found his home at the Working Centre, an incredible local agency that supports community projects (Oldridge, 2011). Pete then wrote the grant application from the perspective of the Working Centre and was able to receive full funding of $20,000 for the first year, with an additional $80,000 set aside for future use if successful (Oldridge, 2011).

CAB is still in its infancy stages; it officially began operating on July 18, 2011 with a capped membership of 60 people to ensure that bikes would be available when needed (Oldridge, 2011). However, it is off to a successful start; there have been over 400 uses of CAB bicycles in the program's short lifespan (Oldridge, 2011). Commuters find it a great way to get around at lunch and lower-

income members benefit from this inexpensive alternative to driving and riding the bus (Oldridge, 2011).

CAB founders enlisted the help of seven local businesses to host the bike racks and charged a membership fee of an affordable $15 per year (Tait, 2011). The bicycles are practical single-speed bicycles containing a front basket, shaped handlebars, and a soft seat (Tait, 2011). Thus far, data has been tracked by host businesses in a Google Document Spreadsheet, recording participant number, bike number, location of departure, and date and time (Oldridge, 2011).

Bike-sharing programs promote active transportation, which is an important aspect of building a healthy community. This program is economically-inclusive and adds to the overall culture of the region. It is environmentally-friendly and may have added benefits of raising awareness for cyclist safety as well as reducing the use of personal automobiles for short trips, thereby reducing carbon dioxide emissions. An affordable bike-sharing program can also enhance social inclusion and diversity within a community, while improving users' overall physical health.

Recommendations for Kingston

In 2000, Yellow Bike Action (YBA) Kingston was formed as a community volunteer-based non-profit organization that provided affordable bike leasing to students and community members

(Pomery, 2011). This organization is now focused on low-cost bicycle repairs and sales; the bicycle-leasing program failed due to administration problems, inability to keep up with the strong demand, and volunteer burnout (Pomery, 2011). However, Michael Pomery (2011) is optimistic that a bike-share program would succeed with the appropriate stations, administration, and monitoring.

According to the *College Sustainability Report Card*, which provides sustainability profiles for over 300 colleges in North America, Queen's University received a 'C' grade in the transportation category (Sustainable Endowments Institute, 2011). This category focuses on alternative transportation for students, faculty, and staff through policies and practice related to facilities and administration (Sustainable Endowments Institute, 2011). Queen's falls behind 69% of colleges; in fact, 50% of the schools in this survey offer bicycle-sharing programs (Sustainable Endowments Institute, 2011). Thus, Queen's could improve its grade by instituting a bicycle share program.

Since most cities cannot afford the large-scale BIXI bike share program (i.e. in Montreal and Toronto), this adaptable small-scale model is more suitable for mid-sized cities. In Kingston, it could begin as a Town-Gown initiative - a pilot program moving Queen's University students from the downtown area to campus. Stations would be located at various locations (i.e. Artillery Park; City Hall; Kingston Centre; Metro; West Campus; Main Campus) totaling approximately 30 bicycles. Once up and running, the program will only require 20-25 hours a week with a maintenance and relocation staff member (Oldridge, 2011). It would be wise to gather key stakeholders together to engage in a roundtable discussion about how to get this program to work in this context as successfully as it has in Kitchener (Pomery, 2011). If initiated well, this program has tremendous potential to expand.

Barriers to Implementation

- *Policy Champion:* Pete Oldridge led this community initiative to its success; Kingston would likely need a similar face for the program in Kingston
- *Funding:* will need an environmental grant similar to LEAF
- *Bicycles:* would need to be visible in the community, maintained properly, and stored in appropriate conditions during the winter (CAB uses part of a City parking garage)
- *Sign-in System:* CAB is looking to switch to a bar code system next year to make the process more convenient and easier to track with each member and each bike having a barcode to be scanned in by the host organizations
- *Publicity/Awareness:* handing out pamphlets on campus; press release to local media; mass e-mails through the Queen's server
- *Theft/Vandalism:* would need to take this caution into consideration
- *Locking System:* low-key locking system has been crucial to the success of CAB

Departments Required & Community Partners

Community partners could include: the City of Kingston's Transportation Planning Department; Yellow Bike Action Kingston; Queen's University Town-Gown Relations; Kingston Coalition for Active Transportation (KCAT).

Policy Tools

CAB would not have been possible without: the office space provided by the Working Centre; funding provided by the LEAF grant; the recruitment of local businesses to host the bike racks; and the enrollment of members through publicity. The following documents are useful tools for information and potential implementation:

Materials/Outputs/Policy Documents/By-laws

CAB Brochure:

http://www.theworkingcentre.org/ct/cab/cab-brochure.pdf

CAB Agreement of Understanding:

http://www.theworkingcentre.org/ct/cab/cab-agreement.pdf

CAB Registration Form:

http://www.theworkingcentre.org/ct/cab/cab-registration-form.pdf

Source: *The Record* (13 July, 2011)

Residential Parking System			
Edmonton, Alberta			
economic	environmental	cultural	social
short-term		medium	long-term

Overview

Regulating residential parking is one way to curb on-street parking in high-traffic neighbourhoods. A Residential Parking System requires that all vehicles parked on the street must have a permit to do so. In most cases, only people from the selected neighbourhood are able to park their vehicles on the road.

High on-street parking demands in Edmonton, Alberta led to a Residential Parking System. This system was established to ensure parking was always available to residents in areas of high on-street parking. Residents of single-family homes and multi-family buildings that are under four-stories are currently eligible to participate in the program through permits. The program is free to all participants.

The City of Kingston offers annual, visitor, and temporary parking permits. With proof of vehicle registration and residency, the annual permit allows residents in the program areas to park their vehicles on the street. In contrast, the visitor permit is allowed in certain areas only. Visitor permits allow visitors to park their vehicles adjacent to or in close proximity to the address printed on the permit. Lastly, temporary permits are eligible to be obtained by all area residents. Allowances are also made for seniors, people with disabilities, and out-of-town guests.

The Residential Parking System is also used for Edmonton's Commonwealth Stadium and Clarke Park Area residents during events. To park on the street in nearby neighbourhoods, all vehicles must display a valid permit. Vehicles that violate the restriction are towed at the owner's expense. The Transportation Department mails out a list of Major Stadium Events to all area residents.

Residential Parking Systems are not unique to Edmonton. Other North American cities employing similar programs include Vancouver, BC, Calgary, AB, Hamilton, ON, Madison, WI, and Ithaca, NY. Being a large city is not a prerequisite for the program to work. Ithaca, NY has been using a residential parking permit system since 2004 with a population of 30,000 people.

Recommendations for Kingston

First, a Residential Parking System in Kingston would satisfy the Environmental Pillar of Sustainability. The program encourages the use of public transit and car-pooling, as parking is limited in areas where residential parking systems are operating. The Social Pillar of Sustainability would also be satisfied. People will be more likely to walk or cycle to areas where they could previously find a place to park, which would benefit the health and wellness of Kingstonians. It is also likely that neighbourhoods would become quieter and safer from reduced traffic flow and allow for greater social interaction between neighbours and visitors.

Kingston City Council has approved a pilot Residential Parking System program to operate in Sydenham District. The area is bounded by King, West, Clergy, and William Streets. The Project Team proposes that the City of Kingston also consider launching a pilot program in the "student ghetto," as parking is at a premium in this area of the city. The cost with respect to program feasibility would be low, as enforcement is already provided in the area. Operating costs should also be low after the program is up and running. Kingston could also look at using such a parking permit system around the K-Rock Centre on event nights.

Barriers to Implementation

There are few barriers to implementing Residential Parking Systems in Kingston, and hopefully the current pilot program will prove this. The greatest barrier to the success of the program is gaining the support of the population. People who are used to driving their private vehicles and parking them around the "student ghetto" or in Sydenham District will likely be against the program. In Ithaca, NY, if more than 50% of a neighbourhood's population are against a parking permit system, it may be reversed. Kingston could follow Ithaca's lead and wait and see what attitudes are like 6 months to a year after implementation.

Policy Tools

The City of Edmonton has implemented Residential Parking Systems by creating specific documents that facilitate the establishment of new programs and that plan for their monitoring; namely the *Guidelines for Implementing a Residential Parking Program* guidance document. It should be noted that Transportation Operations watches over all Residential Parking System programs in Edmonton.

Source:
http://www.edmonton.ca/bylaws_lic
ences/NoParkingExceptPermit.jpg

Materials/Outputs/Policy Documents/By-laws

Below are some links to City websites with Residential Parking Systems:

City of Edmonton:

http://www.edmonton.ca/bylaws_licences/licences_permits/residential-parking-permits.aspx

City of Edmonton *Guidelines for Implementing a Residential Parking Program:*

http://www.edmonton.ca/transportation/RoadsTraffic/RPP_Guidelines_1998.pdf

City of Ithaca:

http://www.ci.ithaca.ny.us/departments/clerk/resparking.cfm

City of Vancouver:

http://vancouver.ca/engsvcs/parking/admin/rpp_gen.htm

Pedestrianization of McMaster University Campus
Hamilton, Ontario

economic	environmental	cultural	social
short-term	medium		long-term

Overview

"It is a truism that most urban/suburban land use planning and development over the past four decades have made it very difficult to build walkable communities. Connectivity has been designed out - or wasn't there to begin with" (Epstein, 2005). Recent practices of pedestrianization have the ability to adapt developments to current planning trends of walkability. Pedestrianization includes the reduction of single-occupancy vehicle usage (i.e. to restrict vehicle access to a street or area for exclusive use of pedestrians) and the promotion of pedestrian-friendly modes of transportation (i.e. connective sidewalks, bicycle lanes, bicycle paths and walking paths) (Iranmanesh, 2008). The act of pedestrianizing space improves physical and mental health, reduces greenhouse gas emissions, and creates a safe pedestrian environment (MMAH & OPPI, 2009).

To successfully pedestrianize an area requires picking an appropriate location and cooperation with key stakeholders (Epstein, 2005). An appropriate location is determined by the predominant mode of transportation that commuters use to arrive there. If the majority of commuters, walk, bike and/or bus to their destination then that location would be suitable for pedestrianization (Whalen, 2011). The *College Sustainability Report Card* (2011) reported that 99% of the student body and 70% of employees commute to Queen's University by means other than single-occupancy vehicles (2011).

Recommendations for Kingston

McMaster University in Hamilton, Ontario is a perfect example of a university that has recently transformed into a completely pedestrianized campus, with the exception of access for public transit, service, and emergency vehicles. Prior to *McMaster's 2002 Campus Plan*, the University was not concerned with pedestrianization. However, by 2011, it had integrated pedestrian friendly modes of transportation completely within its campus and has currently received an "A" letter grade on the *College Sustainability Report Card's* transportation section. Currently, Queen's University has received a "C", falling below the "B" average for universities and colleges across North America (College Sustainability Report Card, 2011). To successfully pedestrianize its campus, McMaster has: implemented bicycle repair and sharing programs; blocked access for single-occupancy vehicles (excluding public transit, service, and emergency vehicles); connected all pedestrian pathways for cyclists and walkers; illuminated pathways; and implemented a safe walking program for its students and faculty (College Sustainability Report Card, 2011).

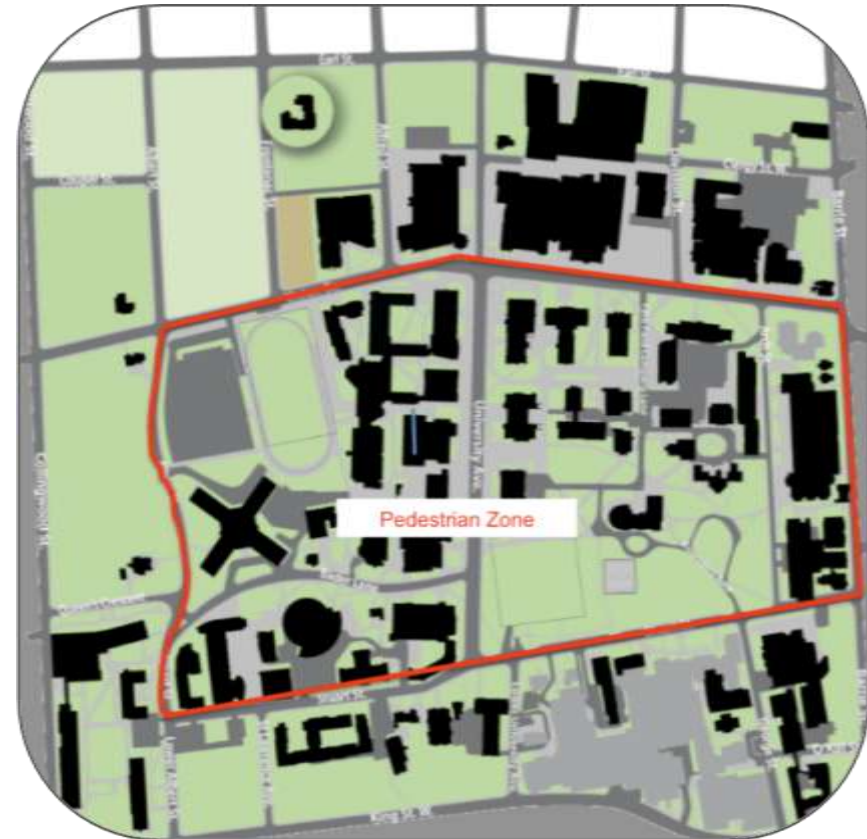Source: *McMaster University Campus Master Plan* (2008)

According to Kate Whalen, Sustainability Manager at McMaster University, and the *McMaster University Campus Plan* (2008), the University was pedestrianized with the following goals in mind: increasing safety on campus, increasing physical activity levels among faculty, staff, and students, and improving the overall health of people and the environment. Therefore, sustainable planning and sustainable transportation are by-products of the original goal of the *Campus Plan*. Today, sustainable transportation is a key element of the revised *Campus Plan* and it has found its way into other campus master plan, including Ryerson University. Queen's University should also be concerned with sustainable transportation and consider pedestrianizing its campus.

Currently, Queen's University has made many alterations to its built environment in order to create a pedestrian-friendly campus while still allowing personal vehicle traffic to pass through and park on its streets. Through cooperation with the municipality, it is conceivable that with a comprehensive pedestrianized campus plan geared towards pedestrian-friendly development is feasible on any campus in North America (Whalen, 2011). Thus, with the City of Kingston's support, Queen's University should begin to move in this progressive direction.

Barriers to Implementation

As previously mentioned, Queen's campus would be an ideal location for pedestrianization because of the campus population's modal split representing a significant proportion of active commuters. However, the cooperation of key stakeholders is integral to this initiative's success. The main difference between McMaster and Queen's campuses is that McMaster University owns its campus streets. Therefore, for Queen's to be able to pedestrianize its campus, the University would either need to buy the streets from the City, or the City of Kingston would need to

agree to close off campus streets for pedestrian purposes. A proposed pedestrian zone on the Queen's University Campus could be bound by Albert, Barrie, Union, and Stuart Streets.

Source: Project Team proposed zone boundaries; map from
http://www.queensu.ca/campusmap/

Policy Tools

McMaster University employed planning and design consultants from Urban Strategies Inc. and MMM Group in developing their plan and the implementation of a pedestrian-oriented design (McMaster University, 2008). With the cooperation of the City and the help of a

consultant team, the pedestrianization of the Queen's University campus is a feasible and environmentally-conscious transformation. Through this type of planning design, the City of Kingston can transform an area that does not currently explicitly promote sustainable transportation and its contribution to a forward-thinking, healthy, active, and environmentally-friendly community.

Materials/Outputs/Policy Documents/By-laws

Refer to the "Overall Policies" sections (pp.63-78) of McMaster's *Campus Plan* (2008) to see how pedestrianization was launched:

http://www.mcmaster.ca/opr/html/opr/our_campus/campus_plan/campus_master_plan.html

The *Ryerson University Master Plan* can be found here: http://www.ryerson.ca/about/masterplan/

The *College Sustainability Report Card* for McMaster University and Queen's University can be found here:

http://www.greenreportcard.org/report-card-2011/schools/mcmaster-university/surveys/campus-survey#transportation
http://www.greenreportcard.org/report-card-2011/schools/queens-university/surveys/campus-survey#transportation

4.2.3   community programs & initiatives

The City of Kingston can only go so far in achieving its sustainability goals without engaging the enthusiasm and abilities of citizens to take them even further. The Sustainable Cities Institute (2011) states, "community involvement is essential to the effective implementation and maintenance of government-initiated sustainability programs." Programming public spaces and encouraging collaboration fosters a sense of ownership of the community and helps everyone understand that cities are for people.

This focus area considers initiatives related to community animation, collaboration, and capacity building. It explores programs to improve citizen engagement in sustainability and healthy communities and the interconnection of different sectors of the population to move toward these goals. These programs are suggestions for possible ways to accomplish these goals to make the City of Kingston a more interesting, sustainable, and inclusive place.

Sustainability Screening Reports (SSR)
Canmore, Alberta

economic	environmental	cultural	social
short-term	medium		long-term

Overview

The Town of Canmore, Alberta recently conducted a sustainability planning process through Natural Step Canada. As a part of their municipal sustainability initiatives, Canmore has implemented Sustainability Screening Reports (SSR) which must be submitted by prospective developers and accepted by Council prior to any development application being accepted (Town of Canmore, 2011).

Through this SSR process, developers are asked to come forward before being given approval and explain the net environmental, social, and economic benefits of their project as it relates to community sustainability. The developer presents the report to Council after which the public is invited to ask questions or make comments (Town of Canmore, 2011).

The planning department provides the SSR checklist, which includes social, economic, and environmental categories with specific sections asking questions about the contribution of the project toward "Strengthening the Social Fabric" by creating affordable housing, or "Building Economic Sustainability" through job creation. "Enhancing Environmental Stewardship" could pertain to questions about how the project balances appropriate density with public access/amenities or how it will maintain biodiversity on or around the site. Each category is weighted and adds up to a score out of 100. The SSR process consists of an application form, the sustainability matrix checklist, and a "narrative" report which must be submitted, giving an overview of the development proposal and

expanding on the information in the checklist. The proponent then presents these documents at a public Council meeting. After Council and the public have a chance to comment and ask questions, the project is either approved or denied. Council can also ask the developer to make some changes before approval is granted. The SSR only considers issues of sustainability, and does not replace the planning approvals process (Town of Canmore, 2011).

Since the SSR process was implemented in 2007, 52 reports have been submitted and 42 have been approved (Town of Canmore, 2011). Through this process, the development community has:

- contributed over $1 million to the Town's Perpetually Affordable Housing fund,
- formally "adopted" the Canmore Community Daycare for 2 years,
- contributed $350,000 funding support for the Canmore Community Coop Workshop and Gallery,
- generated a potential 8.5 million dollars in local wages (The Natural Step, 2008).

The SSR is a tool to encourage integration of the Pillars of Sustainability into development decisions and future development proposals in the City of Kingston. It has the potential to improve all aspects of healthy communities. Depending on the specific questions asked in the sustainability checklist, which would need to be produced to fit the needs and priorities of Kingston, particular goals of a healthy community can be emphasized. For example, within the section on social sustainability, questions about universal design and accessibility and providing services for an aging population could be considered. The environmental section could ask how the development would integrate existing public transportation services, cycling, or pedestrian networks, thus

promoting healthy active transportation. In general, this is a very flexible tool that could be used to promote innovation in any particular priority area and contribute to general sustainability goals.

Recommendations for Kingston

The *Sustainable Kingston Plan* provides a framework and acts as a guiding document for all other City policy documents; however, it lacks teeth in actually setting requirements for development proposals. Developers may be encouraged to read and consider the Plan as a part of their proposal, but they have little direct incentive to do so. Implementing a process similar to Canmore`s SSR in Kingston could encourage developers to consider innovative ways their projects could contribute to the City's sustainability goals. This initiative has potential to both create concrete results and engage both the public and the development community in the sustainability conversation.

Feasibility

The actual financial requirements to developing the checklist and the SSR process requirements are not onerous. Dependent upon local resources, a consultant or external expert may need to be hired, or the existing SSR process used in Canmore could be adapted. In order to execute the SSR process, some additional time requirements would likely be necessary on the part of City planners and Councillors.

Source: http://www.canmore.ca/MunicipalSustainability/Sustainability-Screening-Reports/

Barriers to Implementation

Adding an extra step in the development process could be viewed unfavourably by some. Requiring an extra set of public meetings for all development proposals could increase the time required by City Council to rule on these reports. In Canmore, this initiative was championed by Mayor **Ron Casey (1998-2001; re-elected 2004, 2007, 2010), and came about as a part of the Town's work with** *Natural Step Canada* (Mackrael, 2008). With political will to start up the process, it quickly becomes self-reinforcing as both the public and the development community become more aware of the potential benefits and see the results and positive changes happening in the community.

Jurisdictional Considerations

Currently under Ontario planning law, it is not permissible to refuse to review a planning application. However, it is possible to require pre-consultation before applications can be submitted. The SSR process could be included as a part of the pre-consultation stage.

Departments Required & Community Partners

The following key players should be involved in the SSR implementation process: Planning Department, Sustainability & Growth Department, City Council; and relevant community partners.

Policy Tools

Materials/Outputs/Policy Documents/By-laws

The following are necessary components of the SSR process:

- An application form explaining the process and requesting basic information from developers
- A sustainability checklist/matrix to direct the proponent's self-evaluation

Further information, as well as the application documentation is available on the Town of Canmore website at:
http://www.canmore.ca/Municipal-Sustainability/Sustainability-Screening-Reports/

Social Media in Municipalities			
Edmonton, Alberta			

economic	environmental	cultural	social
short-term		medium	long-term

Overview

Social media is shaping the way people communicate information and share ideas. With over 800 million active Facebook users and 100 million Twitter users worldwide, the ability to instantaneously share information with a wide network of people has increased dramatically. Blogs have the capacity to send longer, more informative messages while photo-sharing sites can generate excitement for events, activities, and products. Many organizations have leveraged these tools as marketing devices, attracting numerous 'followers' or 'friends' to communicate impactful messages directly to the user's inbox.

While private organizations have jumped on this bandwagon since the inception of these sites, municipalities have been slower to adopt. While these tools have immense power to disseminate information quickly, this is also their largest drawback. Each message can have the power to cause damage to the reputation of the firm, person, or organization if not carefully crafted. Social media tools give an individual substantial control over the reputation of the sending organization.

Within Canada, however, several municipalities have capitalized on the opportunity to reach thousands of residents instantaneously. The City of Edmonton has become a nationally-renowned pioneer of social media and has used it effectively to improve communications with its citizens. Calling in the expertise of consultants, they have developed Facebook, Twitter, Flickr and Blogspot accounts for

various departments where there is a strong need to communicate with the public. These include:

Blog	Facebook	Twitter
The Way We Green: Sustainability in Edmonton Edmonton Stories: Stories about living, working and playing in Edmonton Transforming Edmonton: Livability in Edmonton	General Information Emergency Preparedness Outdoor Pools Public Library Transit System	Office of the City Clerk Edmonton Economic Development Corporation (EEDC) Edmonton Police Service Edmonton Public Library
Youtube	**Flickr**	
City of Edmonton Channel	Edmonton Photo Stream	

Before the implementation of social media in Edmonton, the government was perceived to be weak in several areas: a survey of 800 citizens revealed the municipality had problems listening and responding to citizens, communicating complex issues, and transparency with respect to tax value and citizen priorities. Employees of the City of Edmonton have indicated a huge response to the introduction of the various social media platforms listed above. With close to 15,000 Twitter followers and 6,000 Facebook friends on the two main Edmonton pages alone, they are now immediately able to disseminate important information to their citizens.

City staff have cited numerous contributions to a healthier community since the implementation of social media. Not only have

they amassed a substantial audience, feedback has indicated turnout to Council meetings, voting, and public events have increased. Employees have cited increased conversation, engagement in issues, links to richer content and media, increased trust and 'humanization' of the organization, increased ability to gauge support for ideas, and greater overall transparency.

Recommendations for Kingston

Kingston currently does not have a social media strategy, with the exception of a Facebook page unrelated to municipal operations. With over 600,000 visitors to this page, there is clearly huge potential for social media activity.

Source: http://astronomycommunication.files.wordpress.com/2011/05/join-our-facebook-group.jpeg

Barriers to Implementation

While mobilizing social media websites is free, the cost of monitoring the information exchange should not be taken lightly. A case study completed for the City of Edmonton revealed numerous ways in which incorrect utilisation of social media can have financial consequences. Not only are there privacy issues, but relinquishing and disseminating control of the message across different departments means there is greater possibility of distortion of the original message. Another question faced by Edmonton concerned the methodology to employ in selecting certain ideas and which would receive due course.

There is also risk of online criticism of the City's actions and directions. As soon as dialogue is opened up between the

section: the final 15

municipality and the community, there is risk that grievances could be aired very publicly. Some other potential problems include:

- Appropriate time allocation among staff to monitor feed
- Need for constant updating and new posts to keep up in the hyper-paced world of social media
- Sending clear messages across departments
- Controversy and lasting messages that can have permanent impact
- Risk of no response can have highly damaging impacts

In order to combat these issues, the City of Edmonton put in place several strategies prior to launching the various platforms. First of all, they established a Social Media Advisory Committee (SMAC) that would establish guidelines for social media use. The SMAC would also act as a 'silo-buster,' as various departments could use

Source: http://iticsoftware.com/mt-twitter

the committee as a centralized resource. Members of the SMAC are also younger 'tech-savvy' individuals, not senior managers within the organization. They act as a resource for all employees at the City and can share information about similar projects and tools. This framework could easily be applied to Kingston, especially given the large proportion of young tech-savvy students in the city.

Policy Tools

The City of Edmonton has drafted a set of *Social Media Guidelines* designed to help employees use the online platforms effectively. The advantage to having guidelines rather than a policy is that guidelines are easier to update, which is important when dealing with something that changes and evolves as quickly as social media.

Materials/Outputs/Policy Documents/By-laws

The aforementioned document is not readily available for public viewing. However, there are two policies already in place that cover employee conduct with social media tools:

Media Relations Policy (Sections 2-4):

http://www.edmonton.ca/city_government/documents/A1446_Media _Relations_Management_Pro.pdf

Conduct and Acceptable use of Telecommunication Technology Policy (pp.8-9):

http://www.edmonton.ca/city_government/documents/A1429C_Co mm_Technology_Dir.pdf.

Ciclovia			
Bogotá, Columbia			
economic	environmental	cultural	social
short-term	medium		long-term

Overview

Ciclovia originated with the 'open streets' concept in the late 1970s in Bogotá, Columbia. The festival now takes place every Sunday of the year, with 70 miles of streets being closed to vehicle traffic from 7 am to 2 pm. People replace cars and streets become paved parks where people can walk, bike, dance, and skate.

A very popular event that promotes active transportation, *Ciclovia* provides space for citizens to exercise every Sunday. In addition to providing a time and place for physical activity, these festivals provide the foundation for community building and the formation of social connections that have become important aspects of Bogotá's culture.

A growing number of Canadian cities have adopted *Ciclovia* under different names. For the last two years, the City of Hamilton has helped organize *Open Streets* with the goals of raising awareness for active transportation issues and providing tourism and economic benefits to downtown neighbourhoods. In the summer of 2011, the City of Vancouver hosted the inaugural *LiveStreets*. The event closed streets to cars and invited people to travel using any active mode of transportation. Activities including group aerobics, yoga, street hockey, and dance took place at different locations throughout the city.

The implementation of *Ciclovia* fits well into every *Sustainable Kingston* Pillar. It invites the community to participate in healthy activities while raising awareness of the benefits of active transportation modes.

Recommendations for Kingston

This idea has already been implemented to a certain extent in Kingston, but has plenty of room for expansion. The *Princess Street Promenade* has occurred on one Saturday for the past two years. However, this event is focused around shopping in local downtown businesses and has left active transportation in the background. This has not been the case in other Canadian cities. In Vancouver, *LiveStreets* winds across the city including the downtown, but only covers one block of Robson Street, Vancouver's premier retail corridor. The City of Calgary's version of *Ciclovia*, the *Bow River Flow,* states upfront that it is a non-commercialized festival.

While sponsorship opportunities for companies and a retail component can exist in Kingston, the primary focus should be active and healthy public streets. The focus of attention needs to be shifted to the promotion of active transportation and healthy living initiatives. The City could invite members

Source:
http://www.americantrails.org/resources/health/streetspenalosa.html

from local yoga studios and gyms to run public outdoor classes at certain points along the street. Furthermore, the event could occur seasonally, with subsequent increases in frequency if successful.

One of the great benefits of *Ciclovia* is that it does not require great costs and added infrastructure. The streets have already been built, so now the people just need to be invited. The most important factor in its implementation is planning and promotion. The City needs to play the role of champion and promote the benefits of this event to all in the community. Planning and coordination will be required with multiple City departments and businesses. Considering the City already has experience with this event, the only additional requirement is to refocus its mission and increase its frequency.

Policy Tools

Further information regarding implementation of *Ciclovia* can be found at:

http://www.8-80cities.org/Car_Free_Sundays.html

Other Canadian Cities:

Vancouver: www.livestreets.ca

Hamilton: www.openstreetshamilton.ca

Calgary: www.bowriverflow.ca

Waterfront Programming: Urban Beach
Paris, France; San Diego, California, USA; Toronto, Ontario

economic	environmental	cultural	social
short-term		medium	long-term

Overview

Waterfront locations offer unique opportunities to bring life and vibrancy to a city. While developing the entire waterfront and establishing permanent recreational facilities is a long-term and costly process, there has been a trend toward cities establishing quick and temporary public spaces and events to celebrate their waterfront space. Eric Reynolds, of *Urban Space Management,* promotes a local development strategy entitled "Lighter, Quicker, Cheaper" (LQC) as a method for bringing vitality to public spaces. The idea suggests that by focusing on usage rather than design, people and activity rather than architecture and infrastructure will bring colour and interest to a location (Project for Public Spaces).

One of the best examples of this is *Paris Plage* on the banks of the Seine in Paris, France. This event has now been running for nearly a decade and has been such a success that it has now expanded to include four separate themed beaches throughout the city. The waterfront, cut off from pedestrian use during the rest of the year, is transformed into an urban beach complete with sand, deckchairs, and palm trees. The physical set-up takes 5 days and only one day to disassemble. The beach is animated with a full programme of recreational activities including beach volleyball courts, ice cream vendors, aqua-aerobics classes, a giant wading pool floating in the river, and free concerts and entertainment in the evenings. The idea is to allow city residents who cannot escape the heat of the city to take a vacation close to home, as well as creating a fun and vibrant public space in the heart of the city (Project for Public Spaces).

Other cities have taken a similar approach, including San Diego's "Bahia del Sol at the Big Bay," an annual festival which takes place over a series of weekends during the summer. In a previously underused waterfront park, the Port's Land Use Planning Department provided patio furniture, frisbees, and games such as giant chess sets to enliven the area (Unified Port of San Diego, 2008).

Recommendations for Kingston

Source: Montreal Urban Ecology Centre (2010)

Kingston's waterfront is one of the city's major assets and a large part of what makes this city unique and beautiful. A vibrant and connected waterfront encourages healthy, active living and promotes environmental learning by strengthening residents' relationships to water bodies and their stewardship. The city has taken many steps toward rehabilitating a formerly industrial and polluted waterfront into a recreational zone and succeeded in creating several well-used spaces The *Kingston Pathways Study* (2003) sets out a vision for the waterfront and collected priorities from the community for what they are looking for over the long-term. However, many of the underused waterfront areas in the downtown core could easily be transformed with temporary structures and events. Such an urban waterfront festival could use some of the downtown concrete and turn it into a community space, a tourist attraction, increase foot traffic to the downtown businesses, and act

as a destination to encourage active use of the rest of the waterfront pathway and parks system.

Policy Tools

The Project for Public Spaces maintains a website with a wealth of case studies and guidelines for creating a successful urban waterfront:

http://www.pps.org/articles/turnwaterfrontaround/

This website also provides an introduction to "LQC":

http://www.pps.org/articles/lighter-quicker-cheaper

4.2.4   environmental services

In order to meet Kingston's goal of becoming "Canada's most sustainable city," action must be taken to reduce our environmental footprint. Through our research on Canadian and international environmental best practices and workshop discussions with stakeholders, three key areas in municipal environmental management planning and were emphasized. The first of these involves working towards reducing the amount of waste going to the landfill and ensuring that waste diversion processes meet their full potential. Effort must also be made to promote the use of clean energy, minimize dependence on fossil fuels, and reduce emissions of greenhouse gases. Finally, as a waterfront city, it is critical that the quality of Kingston's water systems is preserved and protected.

Sustainable management of waste, water, and energy promotes a healthy and sustainable local economy. Many of these initiatives encourage compact, vibrant, and walkable communities that foster active lifestyles. The following best practices include a common element of highlighting citizen engagement and public awareness. Sustainable cities strive for resiliency and self-sufficiency; an involved and aware population is critical in achieving these goals.

Household Hazardous Waste & Electronic Waste Disposal
Toronto, Ontario

economic	environmental	cultural	social
short-term		medium	long-term

Overview

While the City of Kingston offers household hazardous waste (HHW) disposal, the program is somewhat limited in scope. Kingston currently does not offer electronic waste (EW) collection. The Project Team is proposing that Kingston expand their HHW collection and add EW collection to their roster of waste management services. HHW includes paints, pesticides, propane tanks, batteries, syringes, used motor oil, and cleaning products. Electronic waste comprises old computers, monitors, speakers, televisions, and other electronic parts and products.

Currently in Kingston, the HHW collection centre is only open one day a week (Thursdays) all year round, and two days per week (Thursdays and Saturdays) from April to November. Additionally, there is only one drop-off centre in Kingston (the area recycling centre on Lappan's Lane). It would not be overly difficult for Kingston to expand this service to two days a week all year long, or at least three days per week. Additionally, it would be beneficial and would likely encourage more people to dispose of their HHW properly if there were facilities in the East and West ends of the city that accepted HHW.

Source: www.dcist.com

As mentioned above, Kingston does not currently offer any form of EW collection or recycling. Kingston simply provides a link on the City website to another website that lists local businesses offering electronic waste diversion and disposal alternatives.

The City of Toronto has emerged as a leader in both HHW and EW collection. The City boasts 7 depots that accept HHW drop-offs. They are generally open 6 days a week at varying hours, most of which are also open outside of regular business hours. Because Kingston's HHW drop-off is only open during regular business hours, it is difficult for someone working the same hours to make it to the depot.

Source: www.atyourdisposal.ca

In addition to hosting locations to discard HHW and EW, Toronto has recently started offering EW collection with regular curbside garbage pickup. Residents simply have to put the EW in a bag that is distributed annually with residential waste calendars. If residents use up the bag and have more waste, they can simply place the extra EW in a cardboard box beside their garbage bin. Toronto then recycles the EW with no additional cost to residents.

There are also approximately 30 days throughout the year when Toronto holds 'Community Environment Days'. On these days, City staff set up temporary depots in locations around the city (typically arena/community centre parking lots) where residents can drop off both HHW and EW. Toronto has made it very easy for residents to discard unwanted items and Kingston should be looking to emulate

these conveniences to encourage consistent and proper disposal behaviours.

Recommendations for Kingston

Expanding Kingston's HHW collection and adding EW collection would fall under the Environmental Pillar of the *Sustainable Kingston Plan*. Specifically, this action would target 'Theme EN3: Solid Waste'. Implementing the recommendations herein would increase the residential diversion rate, especially with respect to EW that would otherwise end up in landfills. This action would also indirectly target 'Theme EN2: Water,' as increasing the ease with which citizens can discard HHW will decrease the amount of HHW that is simply poured down drains or into sewers.

Feasibility/Barriers to Implementation

The major barrier to expanding Kingston's HHW program and implementing an EW program is cost. This type of program ranges widely in its scale of feasibility. For example, initially expanding the program by instituting 'Community Environment Days' would be relatively inexpensive. However, implementing bigger projects like having the HHW collection facility open daily or starting to collect EW would be significantly more costly.

Departments Required & Community Partners

The City's Solid Waste Group would likely lead the expansion of HHW and EW collection.

Policy Tools

Toronto has had HHW collection in place for many years, but the recent addition of EW collection has emerged because of

Toronto's *Target70* program. In 2007, Toronto City Council approved the new plan to achieve the goal of diverting 70% of waste from landfills. The passing of the *Target70* program forced Toronto's departments to come up with new initiatives. Likewise in Kingston, expanding HHW collection and starting to collect EW would align with the passing of the *Sustainable Kingston Plan*.

Materials/Outputs/Policy Documents/By-laws

Toronto Household Hazardous Waste:

http://www.toronto.ca/garbage/hhw.htm#002

Toronto Electronic Waste collection:

http://www.toronto.ca/target70/electronics.htm

Pervious Pavement
Chicago, Illinois, USA

economic	environmental	cultural	social
short-term	medium	long-term	

Overview

Stormwater management (SWM) is a major concern in the City of Kingston, with two principal issues: old infrastructure consisting of a significant amount of combined sewers and a large proportion of impervious surfaces in the downtown core. Impervious surfaces force rainwater to run directly into nearby storm drains and then into lakes and streams, carrying all pollutants picked up along the way. According to the Cataraqui Region Conservation Authority (CRCA), downtown Kingston is approximately 80% impervious. This is a disconcerting statistic considering that all of Kingston's drinking water comes directly from Lake Ontario. There are also numerous significant wetlands in the surrounding area that are particularly vulnerable.

Source: City of Chicago (2011)

The purpose of pervious pavement is to allow percolation/infiltration of stormwater through the surface and into the soil underneath. The soil naturally filters the stormwater and removes pollutants. Many studies have linked water quality degradation to high levels of impervious surfaces in urban areas. Thus, any efforts made to reduce levels of impervious surfaces in a city represent positive steps towards improving a community's water quality.

Pervious pavements can be substituted for traditional pavements in many situations including: driveways, low-traffic roads, fire lanes, and emergency access roads; parking areas, especially over-flow parking and those associated with office buildings, shopping centres, and recreational facilities; sidewalks; road shoulders and vehicle cross-overs on divided highways; boat launching ramps; and pool decks and patios.

Benefits of installing pervious pavements:

- reduced surface runoff
- replenished groundwater
- reduced flooding which may over-load combined sewers
- sewage treatment plants
- less land set aside and cost for development of retention basins
- reduced pollutants in run-off
- reduced irrigation of area plantings based on the seepage of rain into the sub soil surfaces
- reduced thermal pollution
- lessened evaporative emissions from parked cars
- reduced glare and automobile hydroplaning (skidding) accidents
- reduced pavement ice build-up

The cost of pervious pavement is typically 10-15% higher than traditional pavement, but well worth it considering the benefits, especially in protecting source water.

The City of Chicago has implemented the "Green Alley" program that aims to replace all of the city's 1900 miles of public alleys with pervious materials. This represents approximately 3,500 acres of impermeable paved surface in the downtown. The City of Chicago has also produced the *Green Alley Handbook* to encourage other

cities and municipalities to follow their lead. The project has completed its pilot phase. The results have been so positive that Chicago has now mandated that all alleys that are replaced need

to be green. The program started in 2006; as of 2010, more than 100 alleys have been retrofitted as green alleys. Every review or assessment of the program consulted has been positive.

The project uses a combination of pervious asphalt and pervious concrete, depending on the specific site. As mentioned above, the permeable pavement has pores or openings that allow water to pass through the surface and percolate through the existing subsoil. Typically, the old asphalt is removed,

Source: City of Chicago (2011)

a limestone base of 1-2 feet is installed, and the permeable concrete or asphalt is laid on top. In areas that drain poorly, permeable pavement can be used in combination with subsurface drainage systems, like pipe underdrains or stormwater infiltration trenches to slow runoff and reduce stress on the combined sewer system. Chicago is also targeting owners of private property. Currently, there are no specific incentives to help with the cost of retrofits, but the City is actively encouraging property owners to consider permeable options when replacing driveways, patios,

and parking slaps. Another excellent example of a permeable paving program is in Portland, Oregon. Portland has retrofitted three blocks worth of city streets with pervious materials.

Recommendations for Kingston

Incorporating permeable pavement into future downtown infrastructure projects would align with both the Environmental and the Economic Pillars in the *Sustainable Kingston Plan*. First of all, permeable pavement would address 'Theme EC4: Infrastructure.' One of the key indicators set forth in the EC4 section is the number of wastewater main backups per year; permeable pavement would reduce this number by curtailing the amount of stormwater that the City's infrastructure has to process. Second, permeable pavement addresses 'Theme EN2: Water.' Permeable pavement would help meet several of the goals in this section, such as minimizing the amount of untreated sanitary sewage dumped into natural water bodies and minimizing pollution and sediment deposits from stormwater runoff into natural water bodies.

Kingston does not have nearly the number of paved alleys in its downtown, but the scale of a potential project need not be as large as the one in Chicago. Kingston could easily include permeable pavement when completing projects such as the Princess Street Reconstruction. New sidewalks could be constructed using permeable materials. Working towards the goal of becoming "Canada's most sustainable city," Kingston could consider requiring that all parking lot retrofits in the downtown be done using permeable materials. Small-scale pilot projects are a realistic first step in phasing in the use of permeable materials in infrastructure construction and retrofits.

Feasibility/Barriers to Implementation

The major barrier to implementing a permeable pavement program in Kingston is cost. As mentioned above, the cost of permeable paving materials is 10-15% higher. Small-scale pilot projects, such as sidewalk or boulevard retrofits, are a realistic first step in phasing in the use of permeable materials in infrastructure construction and retrofits. However, implementing a city-wide program to replace all city parking lots with permeable surfaces would be significantly more costly.

Departments Required & Community Partners

The City's transportation, engineering, and planning departments would likely be involved in the initiation of this program.

Policy Tools

The major policy impetus behind this project in Chicago was the passing of Chicago's *Climate Change Action Plan*. This Plan required that every City department was responsible for developing a solution to mitigate the consequences of climate change in their area of responsibility. The *Green Alley Program* was the Department of Transportation's response. As mentioned above, Chicago City Council has now mandated that all alley retrofits must be done using green materials. Kingston would likely have to pass a similar motion, tailored to the City's specific focus. Having already passed the *Sustainable Kingston Plan*, a program to reduce impervious surfaces in the City would fit its goals.

Materials/Outputs/Policy Documents/By-laws

The key output from Chicago is the *Green Alley Handbook*. For further information on the project, contact David Leopold, Project

Manager, *Streetscape and Sustainable Design Program*, Chicago DOT, at david.leopold@cityofchicago.org.

Chicago *Green Alley Handbook*:

http://www.cityofchicago.org/city/en/depts/cdot/provdrs/alley/svcs/green_alleys.html

Chicago *Climate Change Action Plan*:

http://www.chicagoclimateaction.org/

Permeable Pavements:

www.lakesuperiorstreams.org

Portland *Pervious Pavement Projects*:

http://www.portlandonline.com/bes/index.cfm?a=77074&c=45435

Integrated Community Energy Solutions (ICES)
North Vancouver, British Columbia

economic	environmental	cultural	social
short-term	medium		long-term

Overview

Canadian communities account for as much as 60 percent of the country's energy consumption, primarily through the construction and operation of residential buildings, commercial buildings, industrial activity, and passenger transportation (Natural Resources Canada, 2009). Efforts to reduce community energy consumption and greenhouse gas emissions should consider the complex nature of energy use and the variety of opportunities that exist to improve energy efficiency within a community. Integrated Community Energy Solutions (ICES) are gaining in popularity among Canadian municipalities as a means of organizing and providing clear direction for energy efficiency goals. This approach considers community energy management holistically; it integrates multiple sectors and involves concepts such as clean energy, low-impact building design, transportation demand management, and compact, mixed-use development. ICES projects are most successful when "project proponents apply an energy lens to development or re-development as a whole" (Causley, 2011).

ICES projects can be carried out in a variety of ways to meet the needs of a particular city. They often begin with an energy mapping project, or taking a detailed inventory of energy use and greenhouse gas emissions through an entire community in order to establish baseline data. These numbers can then be used to set ambitious, yet realistic long-range reduction targets. A *Community Energy Plan* (CEP) is often created, outlining goals of

the ICES project along with specific initiatives that are to be carried out. Once these are implemented, the initiatives should be regularly monitored for their effectiveness. A number of Canadian communities, ranging from large and mid-sized cities to small rural towns, have begun to implement these projects at differing scales.

Source: City of North Vancouver *Community Energy and Emissions Plan* (2010)

The mid-sized City of North Vancouver, British Columbia has carried out energy mapping projects and created climate and energy plans to facilitate such initiatives as a district energy system, brownfield remediation projects, and new development standards (Causley, 2011). The City's *100 Year Sustainability Vision* (2009) outlined goals of reducing greenhouse gas emissions by 80 percent by the year 2050 and reaching carbon neutrality by 2107; this document led to the creation of the 2010 *Community Energy and Emissions Plan*. The Plan outlines baseline community-wide greenhouse gas emissions and energy use from the areas of commercial, residential, and industrial buildings, transportation, and solid waste. Specific

reduction targets are identified for each decade until 2050. This detailed plan describes many initiatives that are to be taken in order to meet these targets, organized into the areas of land use, transportation, buildings, energy supply, and solid waste. An estimated cost of implementing each initiative is provided within a detailed chart, along with potential external sources of funding. For example, infrastructural changes to promote active transportation across highways, creeks, and rail lines are estimated to cost $2 million over the initial 10-year period, with some external financing provided through federal grants. The *Community Energy and Emissions Plan* is supported by an Official Community Plan Amendment that established greenhouse gas emissions reduction targets in accordance with British Columbia's province-wide targets.

The City of Guelph has also implemented an ICES project, appointing a community energy manager and developing a 25-year *Community Energy Plan* in 2007 through extensive work with various stakeholder groups including Guelph Hydro, representatives of local business and industry, the University of Guelph, local school boards, the Chamber of Commerce, and an outsourced international energy expert (Natural Resources Canada, 2009). Guelph's objective through this plan is to use less energy and reduce greenhouse gas emissions by nine tonnes per person by the end of the 25-year period, despite rapid population growth. The City held workshops and looked at international examples of similar plans to ensure that the initiatives highlighted throughout the CEP could be effectively implemented and reduction targets could be met. The plan highlights the importance of taking a detailed inventory of community energy use as a starting point in the goal-setting process. Initiatives include a *Community Improvement Plan* to revitalize the City's urban centre and strict energy efficiency standards for new residential and commercial buildings.

ICES Initiatives

ICES projects can take on many different forms depending on the opportunities and resources available to a community. During the Project Team's interim workshop and discussions with Kingston stakeholders, several ideas were generated that could be applied within an ICES project. One initiative that was popular among participants was a district energy system. District energy systems involve a localized system of buried pipes that distribute geothermal heating or cooling to a cluster of buildings, promoting the use of locally available energy sources and reducing the costs, energy losses, and dependency associated with large-scale fuel transport (Canadian District Energy Association, 2011). The Town of Markham, Ontario has become a leader in Canadian district energy systems with the creation of the Markham Centre in 1999. The Town's goal was to become more self-sufficient after observing the impacts that Eastern Canada's 1998 ice storm had on the power industry. The Markham Centre has been continuously growing, with more than 6 million square feet of mixed-use development being served. Eventually, service will expand to 25 million square feet, resulting in a projected 50 percent improvement in community energy efficiency and a 50 percent reduction in emissions (Markham District Energy, 2009). District energy could have great potential for success, particularly in forthcoming new developments in downtown Kingston like the North Block. The installation of a district energy system in this area would represent significant remediation and innovation in redeveloping the existing brownfield site.

Another concern that was raised by workshop participants was the overuse of air conditioning in Kingston's commercial and public buildings during the summer months. Setting a minimum allowable temperature for these buildings is a potential low-cost initiative for the City to undertake and may significantly reduce community-wide energy use and emissions. The potential for such a project to contribute to the City's energy use reduction goals could be assessed through a detailed community energy mapping project.

Impacts of ICES

Natural Resources Canada's ICES *Roadmap for Action* (2009) presents a "vision" for 2050 where all Canadian communities have successfully implemented ICES projects to contribute to meeting national, provincial, and territorial emissions reduction targets. In this vision, communities take advantage of opportunities for local energy generation, promote energy-efficient land use planning and building design, make public and active transportation accessible and attractive to all residents, and educate municipal workers and local business leaders on ICES techniques. Although ICES is a relatively new concept among Canadian communities and most projects have not yet been in place long enough to accurately measure their impact, the Canadian organization Quality Urban Energy Systems of Tomorrow (QUEST) released a study in 2010 where data from four communities was scaled to predict the potential impact that ICES projects could have nationally. The study highlights the benefits of ICES: financial savings, job creation, economic growth, and a cleaner environment. It was estimated that if all of Canada's 5400 communities implement ICES projects, national greenhouse gas emissions could be reduced by 12 percent resulting in savings of up to $29 billion in capital spending, labour, and energy by the year 2050 (M.K. Jaccard and Associates, 2010).

ICES projects have great potential to contribute to an involved, active, and healthy public. By reducing emissions, air pollution levels are improved for residents. They allow for opportunities to engage members of the community in the common goal of reducing energy consumption. ICES projects promote liveable compact, mixed-use communities that foster public and active

transportation to make healthier lifestyles possible. These types of developments also make city services and amenities more equally accessible to all residents, reducing travel costs and automobile dependence.

Recommendations for Kingston

The Project Team's survey of Kingston's existing sustainability initiatives found several projects that could be incorporated as components of ICES. The City has taken greenhouse gas emission inventories from 2000 to 2006, setting reduction targets based on this information. Effort has also been made to retrofit city-owned buildings for improved energy efficiency, and building developers are encouraged to strive for LEED certification. Kingston Transit vehicles are using cleaner fuel technology. Development in the City's urban centre is being intensified with a focus on vibrancy and livability. An ICES project, including the development of a *Community Energy Plan*, could provide a more streamlined process and better focus for such projects. It would allow for efficient monitoring of energy consumption and emissions trends in response to actions taken. It could address further opportunities to make an impact on energy use, and allow for continuous adaptation to meet changing needs.

Feasibility

ICES projects are highly flexible and can be adapted to virtually any community's unique environment. They can occur at any scale and budget, depending on the resources available to a municipality, and can be based on both long and short-term goals and targets. Many mid-sized and small or rural Canadian communities have successfully incorporated ICES concepts into planning practices. The complexity of the City of Kingston's project would be determined by opportunities for energy efficiency improvements

highlighted through the results of energy mapping, available finances and external support, the availability of experienced staff and outsources expertise, and the cooperation of local businesses.

Barriers to Implementation
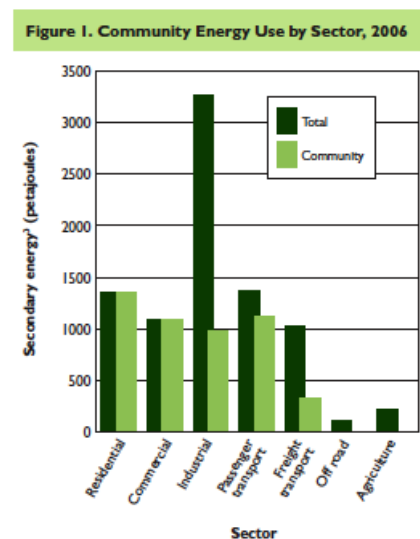
Source: http://oee.nrcan.gc.ca/publications/cem-cme/ices_e.pdf

Natural Resources Canada's *Roadmap for Action* addresses several common barriers that present themselves in ICES efforts. First, experience and expertise in ICES can be lacking in some communities. The inter-disciplinary and inter-jurisdictional nature of these projects can make decision-making complex, and planning practices may not consistently consider energy. Data and analysis tools may not be sufficient for accurate energy mapping projects to be carried out. Funding for such projects may be difficult to obtain in some cases, and smaller communities with shrinking populations could have trouble following through with initiatives. The degree of potential of ICES projects to manage energy use also may not be fully realized or understood (Natural Resources Canada, 2009).

In order to successfully carry out an ICES project, the City of Kingston must have an awareness of the presence of any of these barriers. Effective communication between various jurisdictions should be prioritized. While energy mapping processes may not be perfectly accurate, effort should be made to use the information available to its full potential. A high profile project may be more

successful in obtaining external funding to carry out ICES initiatives. The great potential for an ICES project to help Kingston meet its emissions reductions targets should not be ignored.

Jurisdictional Concerns/Broader Policy Framework

ICES projects work within and are often facilitated by provincial policy frameworks that municipalities operate under. The Province may provide support for ICES programs and associated infrastructure, and can have great influence on the capacity of energy companies to support the projects. The Ontario Building Code's new energy efficiency standards, for example, encourage communities to make great effort in regulating energy consumption. The federal government also provides policy leadership in setting national emissions reduction targets, offering incentives for investments in energy-efficient infrastructure and providing research and development, skills and knowledge (Leach, 2010). While provincial and national jurisdictions provide much of the support necessary to implement ICES projects, it is up to individual communities or municipalities to take action.

Departments Required & Community Partners

An ICES project would involve collaborative efforts many of the City of Kingston's departments and community partners, although specific groups involved would be dependent on the established scope of the project. The Planning and Development Department and Sustainability and Growth group would likely lead the development of a *Community Energy Plan* outlining the goals of the project and initiatives to take place. Official Plan amendments could be made accordingly, and city zoning by-laws would be adapted to the project. Utilities and energy companies would be highly involved in providing energy sources and services to conform to the project, promoting local and clean energy and attracting

investments. Kingston Transit would need to be involved in most transportation-related initiatives. Developers and business leaders would need to collaborate with the City on new projects, building maintenance, and retrofits. They would particularly be instrumental in the creation of district energy systems. Kingston may not have the same resources as larger cities, and could benefit by outsourcing to obtain the required expertise (Natural Resources Canada, 2009).

Policy Tools

Materials/Outputs/Policy Documents/By-laws

Natural Resources Canada (2009): *Integrated Community Energy Solutions – A Roadmap for Action*

http://oee.nrcan.gc.ca/publications/cem-cme/ices_e.pdf

- This document was prepared to promote Integrated Community Energy Solutions throughout Canada in order to meet national emissions reduction targets. It highlights the roles of federal, provincial, territorial, and municipal governments in working with communities and stakeholders.

City of North Vancouver (2009): *100 Year Sustainability Vision*

http://www.cnv.org/c//data/3/541/100%20Year%20Sustainability%20Vision.pdf

City of North Vancouver (2010): *Community Energy and Emissions Plan*

http://www.cnv.org/c/data/3/591/Community%20Energy%20and%20Emissions%20Plan.pdf

City of Guelph (2007): *Community Energy Plan*

http://guelph.ca/uploads/ET_Group/admin/CEP_report_web.pdf

Canadian District Energy Association

http://www.cdea.ca/

- The Canadian District Energy Association represents government agencies, building owners, developers, energy companies, and many other groups working towards promoting district energy in Canada. It holds the following vision: that "by 2030, thirty percent of Canada's building stock is connected to a thermal district energy system and that all urban developments require that district energy systems are mandatory elements of community energy planning."

Markham District Energy Inc.

http://www.markhamdistrictenergy.com/index.php

- Markham District Energy has been responsible for the creation and ongoing expansion of the Markham Centre, one of Canada's leading district energy systems. This website describes the goals and processes behind the Markham Centre.

5.0 recommendations

The enthusiastic participation of our final Open House's many attendees demonstrated the high level of interest within Kingston in making these sustainable policies and initiatives a reality. While we have identified six leading best practices that stakeholders have prioritized for implementation, each of the project's fifteen initiatives was carefully selected to be applied to Kingston's unique environment and local conditions and we feel that each one will be instrumental in pursuing the goal of becoming "Canada's most sustainable city."

The results of the Open House voting ballot (for Open House Ballot Form see Appendix 10) are presented in the bar chart below:
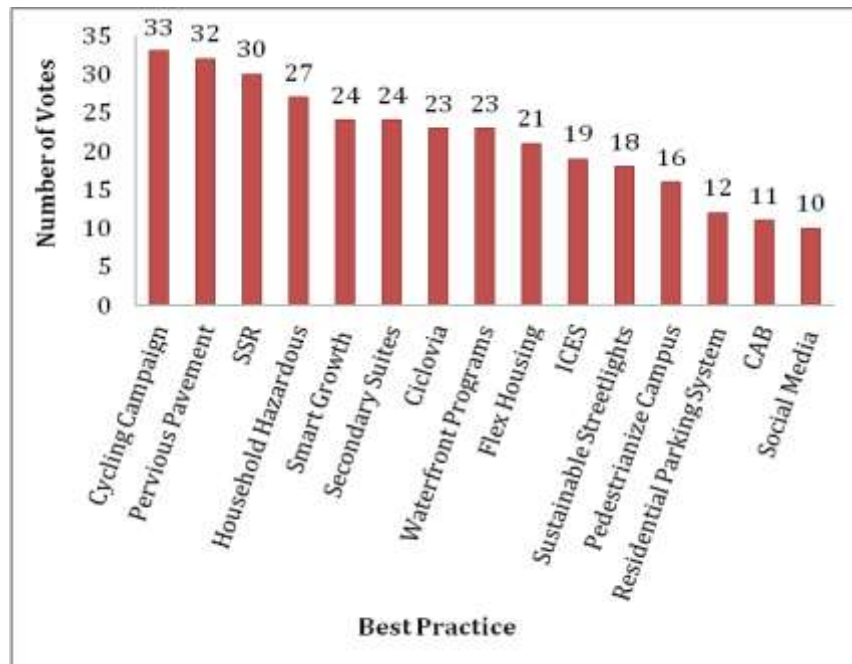
The six best practices prioritized for implementation by the City of Kingston, as chosen by over 50 participating stakeholders are:

1) Cycling Public Awareness & Incentives Campaign
2) Pervious Pavement
3) Sustainability Screening Report (SSR)
4) Household Hazardous Waste & Electronic Waste Collection
5) Smart Growth Development Plan
6) Making Secondary Suites Easier

Total Votes	323
Total Number of Ballots	55
Votes per Ballot	5.87
Total Attendees	66
Voter Turnout	83%

Voting Information – Open House, December 6, 2011
(for comprehensive Final Workshop Presentation & Open House Results see Appendix 11)

Through studying the processes behind each best practice, we have found several key strategies and techniques that can be employed for effective and streamlined implementation of these initiatives. First, strong policy frameworks are needed to guide the actions of all groups involved and encourage the consideration of sustainability within all development processes and municipal activities. Many of our international best practice examples were headed by key policy champions that took full advantage of available resources and opportunities. These characters took initiative and collaborated with many different departments and stakeholders with varying expertise. Consistent communication and ongoing education will be critical in making implementation possible.

Each of these initiatives should begin with detailed and clear goal setting. Ambitious, yet realistic short and long-term goals will guide implementation and encourage all groups involved to constantly work towards environmental, economic, cultural, and social sustainability. All initiatives should be regularly monitored for their effectiveness and measured against concrete success indicators. This will help to identify any changing needs and emerging challenges that must be addressed, allowing for community resilience and constant adaptation.

The Project Team would like to sincerely thank all those who volunteered their time during this process and the valuable feedback that they provided. It was through these consultations that we were able to define areas of concern and find effective ways to target these challenges. We are confident that the City of Kingston is ready to take action and has the resources, interest, and expertise to become a world-class leader in health and sustainability.

conclusions

As we strive to have demonstrated, a balance between economic, environmental, cultural, and social sustainability is directly linked to a healthy community. Citizens and city officials across the country and worldwide are recognizing this as a pivotal moment in history to change how we live, work, and play. Rapidly depleting resources and physical and mental health epidemics in many western countries belie the supposed prosperity we have gained from increases in economic wealth. It is now generally accepted that it is not enough to focus on the economy at the expense of all other considerations if we are to equitably disseminate services and address residents' needs. It is not only possible, but necessary, to focus on the environment, society, and culture if we want to ensure future economic stability. An exciting trend towards sustainable best practices that emphasize this integration has been emerging in all facets of city life worldwide. Kingston is in an ideal position to implement and test the effects of sustainable practices on the quality of life and fabric of the community and learn from the successes and failures of comparable cities and innovative initiatives.

The best practices and policy recommendations presented in the report were chosen based on their ability to achieve goals of integration, resilience, and intergenerational equity above all. While there are always initial economic costs in implementing such initiatives, the associated benefits will outweigh the costs in the long run. Variation in the level of physical activities in high-density, compact, and vibrant cities (i.e. Denmark: 86.4%) versus low-density, decentralized cities (i.e. Ontario: 43%) are just one way to show how land use planning and the built environment can influence quality of life, costs associated with health care, social inclusion, the promotion of community vibrancy and diversity, and a myriad of other factors. While there are obviously other considerations in this disparity, transportation modes also show a startling differentiation in habits. While 33% of residents in Copenhagen bike to work, only 8% of residents in Toronto bike do the same (WHO, 2000; 2003). Given similar climates, the explanation must lie somewhere in the composition of the built environment and programs available to its residents.

While the 15 best practices profiled in this report do not center solely on the built environment, they are all indirectly related to a city's built form. The community programs and initiatives aim to bring vitality to a centralized downtown core. The environmental services, in encouraging reduction in energy, promote high-density, compact, and efficient buildings, streetscapes and city services. The transportation policies centre on endorsing active transportation modes which inherently require a compact or well-connected built form. Kingston is in a unique position to leverage its existing high-density, heritage-rich downtown core and continue building inward. While it will take significant political will, resources, and ingenuity to devise and implement initiatives that can begin to realize Kingston's ambition as "Canada's most sustainable city," the policies presented here provide an initial step towards a world-class and exemplary healthy community with an inherently sustainable future.

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