

Best Practices in Sustainable Cities

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BIO

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ABSTRACT

Cities play an important role in the transition toward a sustainable society, and municipal governments are at the forefront of action in this area. Best practices in sustainability can be found in cities all over the world. Examples offered in this discussion paper focus on opportunities that: (1) are within the jurisdiction of municipal governments; (2) can be replicated in the City of Edmonton; (3) represent a more holistic, integrated approach to sustainability, and; (4) are innovative, and lead to transformative change. To offer the greatest breadth of best practices, the research considered examples ranging from process-oriented actions, such as governance structures and community engagement approaches, to applied solutions such as infrastructure projects. As a result, this discussion paper describes two best practice examples in each of the following categories: governance and management; policy and regulation; pricing; education and engagement, and; infrastructure. These are intended to stimulate dialogue around opportunities for the City of Edmonton to consider in its continued transition toward a sustainable future.

INTRODUCTION

The 1987 report of the Brundtland Commission, “Our Common Future,” drew attention to the importance of cities as a means through which to address the challenge of sustainable development. The report laid the foundation for the 1992 United Nations Earth Summit and the adoption of Agenda 21 – a comprehensive plan for a societal transition toward sustainability in the 21st century. At the local level, municipal governments were encouraged to develop their own plans for sustainability, known as Local Agenda 21. Since then, the role of cities in the transition toward sustainability has been increasingly emphasized and municipal governments have been at the forefront of action in this area.

The purpose of this paper is to highlight actions being taken by municipal governments in an effort to make our cities and communities more sustainable. Fortunately, there is no shortage of good examples and best practices to draw upon. However, in an effort to put forward examples that can potentially serve as models for the City of Edmonton, the following concepts have been considered in the selection of best practices:

- **Spheres of Influence** – an understanding of municipal jurisdiction and the ability of cities to control or influence change toward sustainability.
- **Replicability** – the context under which practices were implemented that will affect their ability to be replicated in Edmonton (e.g., population, population density, climate, policy context, etc)
- **Systems Thinking** – understanding how individual components interact within a system and offering integrated solutions that work towards a more holistic definition of sustainability.
- **Innovative** – leading edge examples that result in transformative change.

The best practices offered range from process-oriented actions, such as governance structures and community engagement approaches, to applied solutions such as infrastructure projects. To offer the broadest possible range of approaches to addressing sustainability at the city scale, the following five categories were used to guide the selection of best practices:

- (1) **Governance and Management** – structures, processes and systems that support the implementation and ongoing management of sustainability.
- (2) **Policy and Regulation** – policies and municipal bylaws that influence land use and development practices.
- (3) **Pricing** – economic instruments to encourage a shift toward sustainable behaviours and actions.
- (4) **Education and Engagement** – programs and processes to engage stakeholders and the general public in sustainability planning and implementation efforts.
- (5) **Infrastructure** – capital projects that promote closed loop systems and produce environmental, social and economic benefits.

These best practices provide examples of what is possible when a community takes a purposeful approach to creating a better future for its citizens. The City of Edmonton itself is already known for its exemplary approaches to sustainability including: Gold Bar Wastewater Treatment Plant, a partnership between the City of Edmonton and Petro Canada to use wastewater effluent to replace the river water used in refinery processes, and; Carbon Dioxide Reduction Edmonton or CO₂RE, a community-based greenhouse gas (GHG) reduction program aimed at reducing emissions by 20% below 1990 levels by 2020.

The best practices offered below are intended to stimulate dialogue around opportunities for the City of Edmonton to consider in its continued transition toward a more sustainable future.

GOVERNANCE AND MANAGEMENT

Sustainable City Government Partnership

City of Portland, Oregon

In December of 2006, Portland City Council adopted a resolution to formally create the Sustainable City Government Partnership (SCGP). The goal of the Partnership is to foster a collaborative, City-wide effort to integrate sustainable practices and resource efficiency into municipal operations. The Partnership promotes the City's sustainability goals and strengthens existing policies and efforts across the City's operations through the creation and implementation of bureau-level (departmental) sustainability plans. The Council resolution directed bureau Directors to:

- Appoint a bureau Sustainability Liaison with direct access to bureau management decision makers and experience or skills in developing or implementing strategic plans,
- Adopt, implement and update a bureau sustainability plan and progress report, and;
- Contribute to an annual City-wide sustainability report on progress.

Implementation of the SCGP relies on participation and collaboration between multiple functions of City government, encouraging innovative ideas from all levels through a partnership approach. The SCGP also supports other operational frameworks in order to institutionalize sustainable practices as a part of how the City does business.¹

Whistler 2020 Monitoring Program

Resort Municipality of Whistler, British Columbia

The Whistler 2020 Monitoring Program flows directly from Whistler's Comprehensive Sustainability Plan², making it an integral component of monitoring progress and managing ongoing plan implementation. The 2020 Monitoring Program uses core indicators to monitor progress towards achieving the community vision and priorities (desired outcomes), strategy indicators to monitor performance on the plan strategies (outputs), as well as contextual indicators that provide background information. The core indicators include a 'best case target' and a 'minimum target' that provide direction and incentive.

Indicators are updated on an ongoing basis and reported on an interactive website called the 2020Explorer, which provides information on what is being measured, trends (with charts to visualize the trends), and what sustainability principle is being addressed. Whistler's 2020Explorer also provides information on the implementation status of actions, which is kept current as a result of data management software running in the background that facilitates data collection and allows multiple users to enter and update data. Indicator data comes from a variety of sources both within and external to Whistler. In 2005 and 2006, two additional data collection tools were developed and executed: an annual Whistler community survey; and a Whistler affordability report.³

¹ City of Portland (<http://www.portlandonline.com/bps/index.cfm?c=41482>)

² Whistler 2020 (<http://www.whistler2020.ca>)

³ Whistler2020 Explorer (<http://www.whistler2020.ca/whistler/site/explorer.acds>)

POLICY AND REGULATION

Urban Growth Boundary

Metro and the City of Portland, Oregon

Urban growth boundaries are widely recognized as a tool for assisting municipal governments in meeting a number of sustainability objectives, including: improving the viability of transit by concentrating development; encouraging mixed-use development closer to homes and jobs, helping cut the number of car trips; maximizing the use of existing infrastructure and minimizing new infrastructure costs; revitalizing downtowns and town centres, and; maintaining a working land base for agricultural, rural, forested, and other resource uses.⁴

Portland is often cited as an example of a city with strong land use policies, in particular its urban growth boundary. In fact, since the early 1970's state law has required that each city or metropolitan area has an urban growth boundary that separates urban land from rural land. In Portland, the regional government (Metro) is responsible for managing the urban growth boundary which separates areas where high-density development is focused, from areas where restrictions on non-agricultural development are very strict. In 1995, the State of Oregon passed a law requiring cities to expand urban growth boundaries to provide enough undeveloped land for a 20-year supply of future housing at projected growth levels. Metro's 2040 Growth Concept guides how the urban growth boundary is managed in order to: protect the community characteristics valued by the people who live in the region; enhance the transportation system to ensure the mobility of people and goods throughout the region, and; preserve access to nature.⁵

Green Building Program

City of Vancouver, British Columbia

Municipal governments are increasingly looking for ways to encourage higher performance building standards in their communities (i.e. beyond the building code). The City of Vancouver is a leader in this regard, though the unique jurisdiction provided by the Vancouver Charter allows the City greater influence over buildings.⁶ Still, many of the policies and regulations being implemented are accompanied by program resources that can serve as models for any community. The City's Green Building Program includes a number of policies and supporting resources to assist the City in working towards its goal of ensuring that all new buildings are carbon neutral by 2020, including:

- **Green Rezoning Policy:** A policy requiring rezoning applications to meet LEED Gold registration and equivalency and BuiltGreen BC Gold registration.
- **Passive Design Toolkits:** These toolkits provide best practices for homes and larger buildings for passive design elements such as layout, orientation, insulation, landscaping and ventilation.
- **Green Renovation Guides:** Resource guides to help residents meet new requirements for green design and energy efficiency upgrades for all renovations.
- **Solar Homes Program:** A pilot program offering \$3500 towards the cost of a solar hot water system for people building new homes.⁷

⁴ BC Climate Action Toolkit (<http://www.toolkit.bc.ca/tool/urban-containment-boundary>)

⁵ Metro Urban Growth Boundary (<http://www.metro-region.org/index.cfm/go/by.web/id=277>)

⁶ The Vancouver Charter is a provincial statute that grants the City of Vancouver more and different powers than other municipalities in British Columbia (http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/vanch_00).

⁷ http://vancouver.ca/sustainability/building_green.htm

PRICING

Financing Initiative for Renewable and Solar Technology (FIRST)

City of Berkeley, California

Berkeley FIRST is the City of Berkeley's solar financing program and is an example of a Property Assessed Clean Energy "PACE" bond. The bond proceeds are lent to commercial and residential property owners to finance energy retrofits (efficiency measures and small renewable energy systems). Property owners then repay their loans over a number of years via an annual assessment on their property tax bill.⁸ The Berkeley FIRST pilot program allowed property owners to borrow money from the City's Sustainable Energy Financing District for the installation of solar photovoltaic electric systems. The pilot was the first in the United States to finance the cost of solar installations through an annual special tax on the homeowner's property tax bill that is repaid over 20 years. To follow up on the pilot, the City has joined a state-wide consortium to develop a California FIRST program. Berkeley FIRST was designed to solve many of the financial hurdles facing property owners who wanted to install solar systems. Advantages of the program are:

- There is relatively little up-front cost to the property owner.
- The cost for the solar system is paid for through a special tax on the property, and is spread over 20 years.
- The financing costs are comparable to a traditional equity line or mortgage.
- The solar system stays with the property, and so does the tax obligation.⁹

Congestion Charges

Transport for London and City of London, England

Congestion Charging was introduced into central London in February 2003. The City of London supports the principle of the program, which is run by Transport for London. By law, all money raised from congestion charging is allocated for London's transport facilities. In July 2005 the basic charge for vehicles entering the congestion charging zone was raised from £5 to £8 per day. In February 2007, the original central London congestion charging zone was extended westwards, creating a single enlarged congestion charging zone. Congestion charging contributes directly to reduced traffic levels and facilitates wider transport, safety and environmental improvements to central London. Electric and alternative fuel vehicles (that meet strict emissions criteria) qualify for discounts of up to 100%. Benefits of the congestion charging program include:

- Traffic entering the central London charging zone during charging hours in 2006 was 21% lower than before charging in 2002;
- Between 2003 following the introduction of congestion charging and 2006, these changes were estimated to have reduced emissions of NO_x by 17%, PM₁₀ by 24% and CO₂ by 3%.¹⁰
- Net revenues from the combined scheme in the 2007/08 financial year were provisionally £137 million, the majority of which was allocated to improvements to bus operations in Greater London.

⁸ <http://www.pacenow.org/>

⁹ City of Berkeley Office of Energy and Sustainable Development
<http://www.ci.berkeley.ca.us/ContentDisplay.aspx?id=26580>

¹⁰ Reductions occurred against the wider backdrop of technology changes to the vehicle fleet, much of it driven by European legislation (Central London Congestion Charging Impacts Monitoring, 5th Annual Report, July 2007).

EDUCATION AND ENGAGEMENT

MPowering Madison

Sustain Dane (with the City of Madison, Wisconsin, and community partners)

Mpowering Madison is a social marketing campaign to raise awareness and engage the community in sustainability. The Mpower Pledge asks individuals and organizations to assist in reducing greenhouse gas (GHG) emissions by 100,000 tons of CO₂e by 2011 by committing to:

- Buy more renewable wind and solar power;
- Increase the efficiency of current energy use;
- Install solar systems;
- Reduce car emissions;
- Plant trees, and;
- Conserve water.

Businesses participating in MPowering Madison have implemented 35 projects with anticipated 5-year savings of over \$1 million and expected annual reductions of 6 million pounds of CO₂ emissions. MPowering Madison is delivered by Sustain Dane, a local non-profit organization, and supported by a number of local partners including the City of Madison, Madison Gas and Electric, University of Wisconsin, Dane County United, Citizens Utility Board, RENEW Wisconsin, Clean Wisconsin, Sierra Club, Madison Area Clean Energy Coalition, and Sustain Dane.¹¹

Imagine Chicago

Imagine Chicago (with the City of Chicago, Illinois, and community partners)

Imagine Chicago was a city-wide process in which 50 youth-at-risk interviewed over 150 adult community builders in Chicago about the highlights of their lives as citizens and their hopes for the future. This was the starting point for engaging the citizens of Chicago in a broad-based conversation about the city's future. Today, Imagine Chicago is a non-profit organization working to cultivate civic engagement in a variety of cross cultural and intergenerational initiatives. Since its application in Chicago, a global Imagine movement on six continents has emerged. The Imagine approach has informed civic engagement efforts in municipal governments (such as Calgary and Red Deer), and in a variety of other sectors.

The Imagine approach is based on a process known as Appreciative Inquiry, which is a particular way of asking questions and envisioning a future that fosters positive relationships and builds on the basic goodness in a person, a situation, or a system. Appreciative Inquiry uses a cycle of 4 steps including:

1. Discover: The identification of processes that work well.
2. Dream: The envisioning of processes that would work well in the future.
3. Design: Planning and prioritizing processes that would work well.
4. Deliver: The implementation (execution) of the proposed design.¹²

¹¹ MPowering Madison (<http://www.mpoweringmadison.com/>)

¹² The Art of Appreciative Inquiry, Harvard Business School: Working Knowledge for Business Leaders (<http://hbswk.hbs.edu/archive/3684.html>)

INFRASTRUCTURE

Hammarby Sjöstad

City of Stockholm, Sweden

The idea behind Hammarby Sjöstad was to showcase a unique opportunity – expanding the inner city with a focus on its waterside location, while converting an old industrial and harbour area into a modern neighbourhood. Once fully built out (in 2015), Hammarby Sjöstad will have 11,000 residential units for just over 25,000 people and a total of about 35,000 people will live and work in the area. From the early stages of the project, the City imposed strict environmental requirements on buildings, technical installations and the traffic environment. The City's goal with the development is to reduce the total environmental impact by 50% compared to developments built in the early 1990s.

Energy is produced in a renewable fuel-fired district heating plant in the area. Heat is recovered from the wastewater treatment plant for heating houses and the silt from the treatment process is converted into biogas. Experimental on-site sewage works opened in 2003, extract nutrients from sewage and wastewater via new technology for use on farmland. Surface water is treated locally to avoid overloading the sewage works. Combustible waste in the area is recycled as heat and food waste is composted into soil. Additionally, substantial investments have been made in alternative transportation to reduce car usage. In addition to bike lanes, car-sharing and buses, the light rail line forms a central link with four stops along the main boulevard through Hammarby Sjöstad, and a ferry runs on Lake Hammarby Sjö.¹³

Regent Park

City of Toronto, Ontario

Regent Park is a public housing development that is being redeveloped into a combination of mixed-use buildings with a wide variety of retail, commercial and institutional uses along with a diversity of residential building types. All buildings in the development will be connected to a district energy system, which will supply high-efficiency heating and cooling and have the potential to generate electricity from green sources like cogeneration, solar and geothermal in the future.

Built between 1948 and 1959, the development contains 2,087 rent-geared-to-income (RGI) units, accommodating a population of approximately 7,500. With the redevelopment of Regent Park, all of the RGI units will be retained and an additional 3,000 market units will be built to form a mixed income community consisting of residential, retail, community service, institutional and park uses.

The recent transfer of responsibility for public housing from the Province of Ontario to the City of Toronto's Community Housing Corporation created the opportunity to re-examine the possibility of redevelopment and regeneration of Regent Park. Toronto Community Housing Corporation will run the Regent Park Community Energy System as a joint venture, in partnership with Corix Utilities, and will retain control through 60% ownership.¹⁴

¹³ Hammarby Sjöstad (<http://www.hammarbysjostad.se/>)

¹⁴ Toronto Community Housing Corporation (www.torontohousing.ca/regentpark)

CONCLUSION

There are a variety of approaches to implementing sustainability at the local level. Best practices provide inspiration on what is possible when municipal governments and community partners take meaningful steps to ensure the long term livability and resiliency of the community. While best practices provide guidance on what has worked well in other cities, they can also offer insight into lessons learned along the way (i.e. approaches that may have not worked so well), and are an important resource available to local governments and citizens as they plan for and implement activities to ensure community sustainability.

These best practices demonstrate the breadth of approaches taken to plan for, implement, and manage sustainability at the local level. While it is hoped that they will prove to be valuable examples for the City of Edmonton, they should not be considered as the only best practices worthy of consideration. On the contrary, a number of sustainable city best practices came to light during the research for this paper. A sampling of these best practices is provided below, with web links for further information.

- District heating in Malmö, Sweden: <http://www.malmo.se/English/Sustainable-City-Development/Recycling.html>
- Community engagement in Vancouver, British Columbia: <http://vancouver.ca/oneday/>
- Cycling infrastructure in Copenhagen, Denmark: <http://www.copenhagenize.com/>
- Public transit in Curitiba, Brazil: <http://www3.iclei.org/localstrategies/summary/curitiba2.html>
- Dockside Green neighbourhood development in Victoria, British Columbia: http://www.victoria.ca/cityhall/currentprojects_dockside.shtml
- Travel behaviour change programs in Perth, Western Australia: <http://www.cityofperth.wa.gov.au/web/Living/Getting-in-and-around/TravelSmart/>

In addition to the individual initiatives listed above, there are several online resources and databases that catalogue information on sustainable city best practices and case studies, including:

- Sustainable Cities Best Practice Database: <http://sustainablecities.dk/en/about>
- ICLEI – Local Governments for Sustainability: <http://www.iclei.org/>
- International Centre for Sustainable Cities: <http://www.sustainablecities.net/plusnetwork>
- Federation of Canadian Municipalities Sustainability Community Awards Database: <http://www.collectivitesviables.fcm.ca/FCM-CH2M-Awards/db/awards.html>
- C40 Cities Climate Leadership Group Best Practices: <http://www.c40cities.org/bestpractices/>