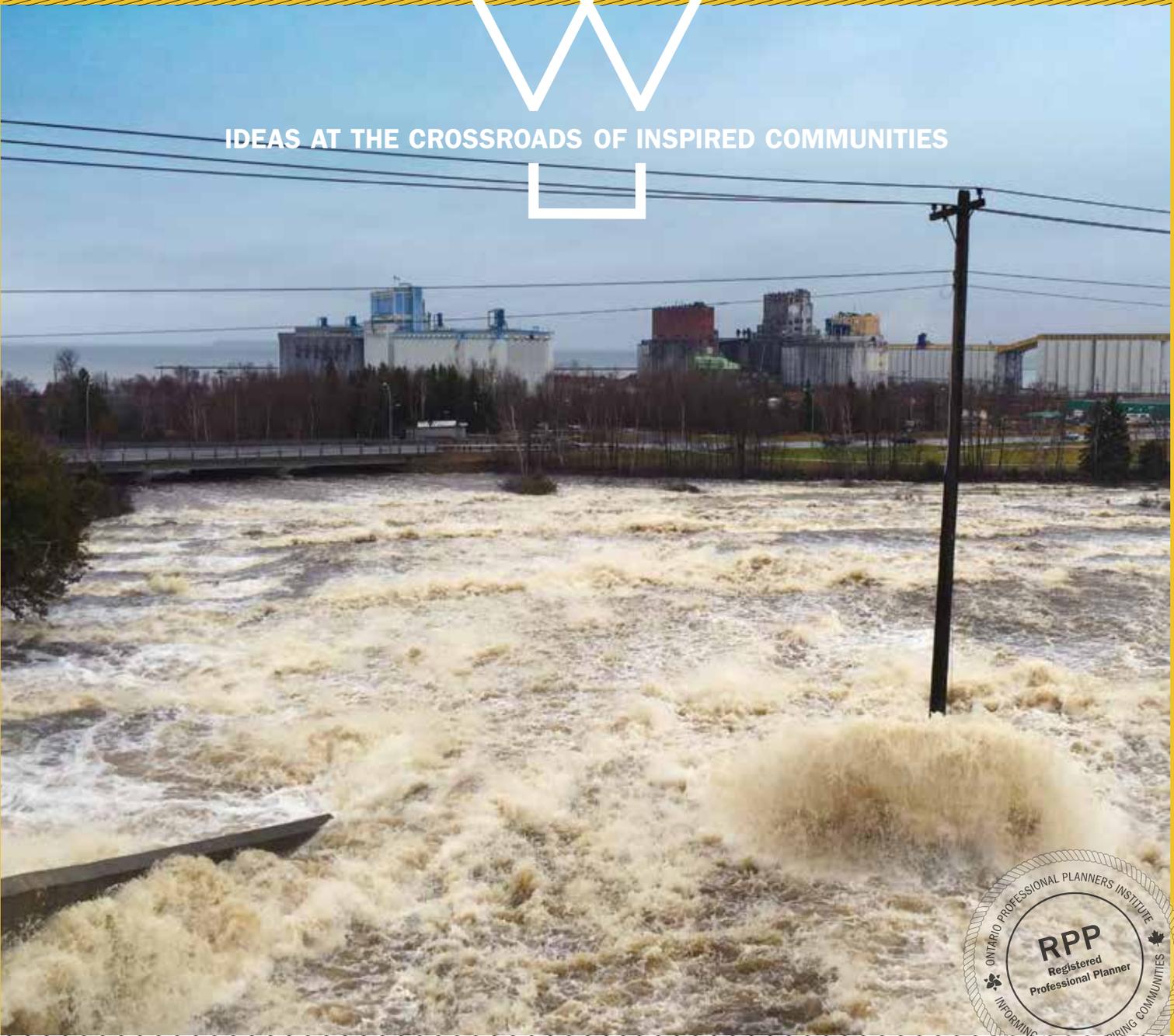




IDEAS AT THE CROSSROADS OF INSPIRED COMMUNITIES



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A small northern community's effort to prepare for the climate ahead

RPPs have been at the forefront of the climate change conversation for some time now.

INSPIRE



VANCOUVER DECLARES CLIMATE CHANGE AN EMERGENCY

Last January, Vancouver city councillors voted unanimously to approve a motion called “Ramping Up Vancouver’s Climate Action in Response to the Climate Emergency.” The motion was introduced by Councillor Christine Boyle, who has been involved in climate justice movements for many years. In fact, climate change was a key reason she ran for office.

“This motion saw Vancouver following

other cities, including London, England, in recognizing the urgency of the crisis by naming it for the emergency that it is and ramping up targets and plans to meet that urgency,” says Boyle.

She adds that many issues within municipal jurisdiction are key for tackling climate change at the scale the science tells us is necessary.

“We need to reduce emission dramatically in 11 years. This means big

shifts in transportation, green building codes, and expansive building retrofit programs. It also means a strong climate lens on land use, so that many more people are able to live closer to where they work. We need to be thinking about climate in all of this, and we need to be thinking about equity, too. We can only adequately tackle this challenge if we are lifting up those most impacted as we go.”

“Right now, Vancouver is reducing GHG emissions by about one per cent per year, and we need to be reducing them by at least three per cent per year,” says Councillor Christine Boyle. “We have a lot of work ahead.”



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Cover photo:

Flooding during the 2016 storm in Thunder Bay.
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OPPI wants to thank Lynn Morrow for her volunteer service and her leadership as the editor of the *Ontario Planning Journal*, as well as for leading the development of the first issue of *Y Magazine*, which was released this past January.

Carolyn Camilleri is our new editor beginning with this issue. She is very open to conversations and welcomes your feedback on *Y Magazine* and your ideas for future issues. Contact Carolyn at editor@ontarioplanners.ca.

Correction notice:

In the previous issue of *Y Magazine* (January 2019), in "A Tale of Two Planners" on page 35, we incorrectly referenced Alex Gaio with an RPP designation. This was a publication error and was not submitted or implied in any way by Alex Gaio. We regret our error and apologize to Alex Gaio.

“RPPs have been at the forefront of the climate change conversation for some time now.”

Planning is participatory and collaborative. Ontario's Registered Professional Planners (RPPs) integrate evidence-based conclusions and public input into their work to address and alleviate emerging issues. Good planning has elements of community values embedded into it and is built around a sound understanding of the local outcomes we want to achieve. It also balances economic, social, and environmental factors.

Planners have always had the foresight and adeptness to identify trends and topics before they escalate into full-blown concerns. That's why our planning, whether it's spatial, land use, environmental, etc., is forward thinking and based on optimizing available resources for maximum output.

But climate change is no longer a prophecy waiting to happen. It's already here. RPPs know this and have been at the forefront of the climate change conversation for some time now. They have helped bring information and education to the table so that other stakeholders, colleagues, and decision makers can understand the scope and potential implications.

That continuing work has had an effect. The issue of climate change is taking root. You can see it in some of the policies and plans municipalities are pursuing today, such as the Climate Change Adaptation Plan, as well as in the conversations that are taking place in the community at large.

Ultimately, I believe it's all about priorities and making sure decision makers understand what's needed to adapt or build mitigation strategies to cope with the impact of climate change, such as soil erosion, flooding, land degradation, agriculture, ecology, etc.

In this issue of *Y Magazine*, RPPs discuss and offer their insights on community initiatives and projects across Ontario that are tackling climate change head on. You'll find a balanced mix of news, views, and interviews from different perspectives around the province, and we're sure you'll find much that interests you.



Jason Ferrigan

Jason Ferrigan, RPP
President
Ontario Professional Planners Institute



CLIMATE CHANGE

In this issue of *Y Magazine*, we focus on strategies being put into action around the province in response to the effects of climate change. As an introduction, read the perspective here from David Miller, North American director for the C40 Cities Climate Leadership Group, a former Mayor of Toronto, and former president and CEO of the Canadian division of the World Wildlife Fund.



RECOMMENDED ACTIONS FROM THE C40 CITIES CLIMATE LEADERSHIP GROUP

BY DAVID MILLER

Climate change is a defining challenge of our time. Its impact is already being felt directly by cities and towns, large and small, with extreme weather events, like storms, floods, wildfires, and bitter winter temperatures.

The crisis is urgent, and the most recent scientific work – the IPCC report and the US Government Climate Assessment – speaks to the need to act now if we are to avoid catastrophic changes. Sadly, the record of national governments does not inspire hope.

Local governments, however, do not have the luxury of waiting. The impact of climate change is already powerful and costly for

“70 per cent of the world’s greenhouse gas emissions can be attributed to cities.”

governments, residents, and insurers. That’s why leading megacities have been working together to address climate change through the C40 Cities Climate Leadership Group. The lessons C40 Cities has learned about climate change mitigation and adaptation are important for all cities and towns.

- **Urban areas matter.** Research done by Arup for the C40 shows that 70 per cent of the world’s greenhouse gas emissions can be attributed to cities.
- **Follow the science.** To achieve the Paris Agreement goal to keep global average temperature increase to 1.5 degrees, we need urban areas to peak emissions by 2020 and be carbon neutral by 2050.
- **Make a plan.** What we need to do is clear: measure the emissions in our cities and towns, and then address the most important sources of emissions, specifically, electricity generation,

buildings, transportation, and waste.

- Use nature and natural measures to help address and mitigate the impact of extreme weather events – not just more pipes.
- Make sure efforts are inclusive and equitable.

PLANS IN ACTION

Toronto’s emissions are about 24 per cent below 1990 levels, due to the provincial closing of the Lakeview coal-fired plant and city-led actions in its 2007 climate action plan. The 2007 plan was adopted unanimously by council, and then updated in 2017. It is slated for update again in 2019.

Conceptually, the plan is simple. Where are the major sources of emissions? What steps will help reduce these? How do we adapt to the new weather patterns? And how do we ensure these actions provide a benefit to residents, especially the most vulnerable?

In Ontario, our electricity grid is clean. While important improvements to local electricity distribution are needed to build resilience – for example, distributed energy through renewables (i.e., roof-top solar) – a focus on buildings, transportation, and waste management (separate and compost!) in Ontario today will produce the more important results.

First, address what is within your own control. Are a town’s buildings as energy efficient as possible? If not, follow Toronto’s lead and create a fund to support energy retrofits on town buildings, paid back through the energy savings. By making the link explicit, there is little if any impact on the tax base.

Or follow New York on transportation. New York has electrified a significant proportion of their fleet, even police cars.

Every city and town can electrify cars and minimize emissions from other vehicles. For example, do parking control officers need a car or can they walk? Does the parks superintendent need a one-ton truck or could a small car meet needs?

When a municipality shows this internal leadership, it becomes easier to ensure others do the same. If its buildings are energy efficient, it becomes easier to pass a green-building bylaw or mandate energy retrofits in existing buildings.

The world’s leading cities are intending to mandate that all new buildings be carbon neutral by 2030 and all existing buildings by 2050. This is not only possible but also essential to collectively meet the Paris goal of keeping the overall average temperature increase to 1.5 degrees. The good news is that these buildings are significantly cheaper to operate, so any additional costs are paid back, typically, in seven to 10 years.

In a big city, electrifying public transport then shifting people from cars to transit is critical to success. In a smaller town, the biggest priority is electrifying personal transportation. We can use Ontario’s clean electricity to make a significant shift, and by taking the lead in creating charging infrastructure, we help to solve the “chicken and egg problem” people face when acquiring a car.

In the world’s major cities, many more actions are happening that lower emissions, save money over time, and create jobs. Most of them are applicable in towns of all sizes. What is needed is the will to start. 

David Miller, North American director for the C40 Cities Climate Leadership Group, a former Mayor of Toronto, and former president and CEO of the Canadian division of the World Wildlife Fund, pictured here in Toronto’s High Park.

URBAN

Growing resilience in Durham Region's agricultural sector

BY KRISTY KILBOURNE, RPP, and DORAN HOGE

Climate change work has been taking place for nearly a decade in Durham Region. Mitigation and adaptation plans are in place and the Durham Community Energy Plan is nearing completion. Planners from across the region have played a key role in developing and implementing these plans.

Most recently, Durham Region has been strengthening relationships between agricultural and environmental interests. Many local farmers already minimize their environmental impacts and help enhance

and protect the rural environment by using best management practices and the latest technology. Durham Region is strengthening that movement through an agricultural strategy that expands on its award-winning Durham Community Climate Adaptation Plan (DCCAP).

THE AGRICULTURAL SECTOR CLIMATE ADAPTATION STRATEGY

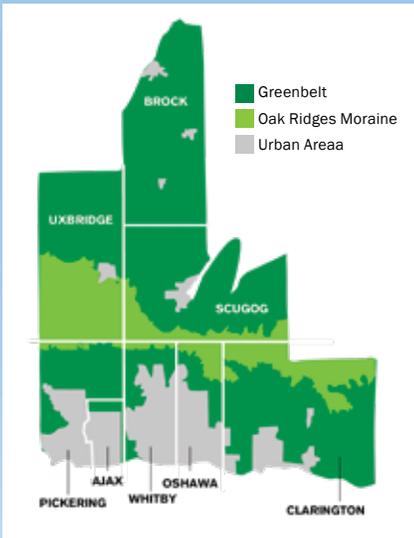
Work on the Agricultural Sector Climate Adaptation Strategy was first announced in early 2018 at a symposium in Port Perry on climate change and extreme weather. A task force made up of agriculture and climate experts, including farmers, guided strategy development. More than 150 stakeholders, including Durham's municipalities, conservation authorities, Parks Canada, the Ontario Ministry of Agriculture, Food and Rural Affairs, academia, and the agricultural community, were engaged to develop the strategy through two broad stakeholder-consultation processes.

Previous attempts to engage the agricultural sector as part of the DCCAP were ineffective, because timing conflicted with the busiest part of the farming season. For the new strategy, the workplan was intentionally timed to consider the unique needs of the agricultural sector in order to

maximize meaningful participation and engagement.

The strategy identifies risks the local agricultural sector is expected to face due to a changing climate, including reduced crop productivity, heat-related health risks for livestock and farm workers, flooding, increased invasive species and pests, damage to public infrastructure and farm buildings, electrical outages, and a need for emergency alerting and response. Actions to address these risks are proposed under broad themes, including building community and research capacity, enhancing policy support for agriculture and climate adaptation, increasing local awareness of agriculture and climate adaptation, and partnerships.

Through consultation, many potential research topics, pilot projects, and informational sessions were identified, not all of which were possible for the region



02



- 01 Durham Region has the second largest agricultural contribution behind Niagara Region in the Greater Golden Horseshoe.
- 02 Over 80 per cent of Durham Region is within the Provincial Greenbelt. Durham is home to more than 1,300 farms, with a total farmland area of more than 118,497 hectares (292,815 acres), approximately 47 per cent of the total land area in Durham.

to undertake or that fell under the scope of the DCCAP. The task force felt it was still important to include these ideas as an appendix for reference and to provide guidance for other stakeholders on possible contributions to adaptation efforts.

Recognition of agricultural diversity within the region was also important, understanding that climate change impacts

“Over 90 per cent of agricultural respondents indicated they are already taking steps to adapt”

will differ across the sector. Farming has always required continuous adaptation to seasonal variability and changing growing conditions. Proposed program options within the strategy are intended to be flexible and reflective of the region’s agricultural diversity.

COLLABORATIONS AND STRATEGIC ALIGNMENTS

The Agricultural Sector Climate Adaptation Strategy benefitted from overlapping work being undertaken by the region and by other organizations. Many of the risks identified by the DCCAP that other sectors will face will also impact the agricultural sector, including extreme heat, extreme weather, and electrical-sector vulnerability.

The region’s agri-food asset mapping was developed in partnership with the Greater Golden Horseshoe Food and Farming Alliance and is traditionally used for economic development. For an upcoming update, the mapping will be considered for its additional uses, such as agricultural-impact assessments and comparison with other data sets, including infrastructure,

flood mapping, and food security, to better inform adaptation planning.

The success of this project and its broad support can largely be attributed to collaboration. Durham Region’s planning and economic development divisions are contained within the same department and work very closely together. Over the years, through its economic development portfolio and agricultural advisory committee, the region has forged strong relationships with the agricultural community.

Strategic alignment was another aspect of successful collaboration and not reinventing the wheel. The strategy supports the Durham Agricultural Strategy (2013-2018), Durham Region Food Charter, climate-adaptation positions of the Ontario Federation of Agriculture and Canadian Federation of Agriculture, and others.

Climate change consideration was also incorporated into the region’s recent Local Food Business Retention and Expansion Study. Over 90 per cent of agricultural respondents indicated they are already taking steps to adapt, such as, diversification of crops and crop varieties, erosion management, using frost fans, and adjusting planting and harvesting schedules. An opportunity exists to learn from, build on, and share local adaptation practices already taking place.

The Friends of the Greenbelt Foundation recently granted funding to update the region’s climate-projection models in 2019. These projections provide information for climate change planning in the agricultural sector and more broadly. Additionally, the updated projections may be used as the basis for incorporating climate change considerations into watershed planning and developing a climate-resilient Regional Natural Heritage System.

All of this foundational work has positioned Durham Region well to

FARMS IN DURHAM

-  **264 Cattle ranching and farming**
-  **277 Other animal production**
-  **278 Oilseed and grain farming**
-  **211 Other crop farming**
-  **101 Greenhouse, nursery, and floriculture production**
-  **48 Poultry and egg production**
-  **39 Sheep and goat farming**
-  **43 Fruit and tree nut farming**
-  **59 Vegetable and melon farming**
-  **3 Hog and pig farming**

incorporate climate change considerations into its official plan. As part of this process, planners are reviewing existing climate change documents to determine how the official plan can support and enhance Durham’s climate change initiatives.

The Agricultural Sector Climate Change Adaptation Strategy is a significant step towards acknowledging the impacts climate change will have on agriculture and will support farmers’ efforts to adapt and be productive and profitable over the long term.



Kristy Kilbourne, MES.(PL), MCIP, RPP, is a member of OPPI and the Senior Planner and Durham Agricultural Advisory Committee Staff Liaison for the Regional Municipality of Durham. **Doran Hoge, MA**, is the Climate Change Programs Coordinator for the Regional Municipality of Durham.



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NORTHERN

Superior adaptation by nature: Thunder Bay isn't sleeping on climate change

BY AMY COOMES AND GRANT MASON

On May 28, 2012, a series of heavy thunderstorms formed and re-formed over the Thunder Bay area, bringing record rain fall to the area's watershed. Floods washed out roads and trails, disrupted power to homes, businesses, and residents, and fast-moving water tore up large chunks of asphalt on roadways. The City of Thunder Bay's Water Pollution Control Plant experienced extreme flows that resulted in flooding of below-grade tunnels and the main pumping station.

The 2012 flood was one of the most costly in the city's history and was classified as a one-in-100-year storm. The 2012 storm was preceded by flooding in 2008 and followed by a third storm in 2016. The trio of storms forced the City of Thunder Bay to contend with the changing reality of climate change.

- 01 Thunder Bay's century-old Boulevard Lake dam across the Current River as it looked during the 2016 storm event.
- 02 The low-impact development facility on Memorial Avenue in Thunder Bay is an engineered rain garden that beautifies the street and helps deal with stormwater.

FACING CLIMATE THREATS HEAD ON

Climate-model projections indicate a local increase in precipitation of up to 22 per cent in the springtime, a decrease in precipitation of about one per cent in the summer, and a general increase in extreme weather events.¹ If that extra rain falls in one single storm in one part of the city, the results could be disastrous. The city understands this threat and is working hard to face this challenge head on.

Thunder Bay's Stormwater Management Master Plan, passed by city council in 2016, identifies important city-wide infrastructure upgrades and interventions to reduce the risk of flooding and offset the future costs of damage.

“Depending on the severity, the city must decide to resist, absorb, or restore accordingly.”

Climate change in Northwestern Ontario does not end with flooding, as pressures continue to grow from freezing rain, wind bursts, vegetative dieback, invasive species, ticks, algae blooms, warming waters, thin ice, dry wells, heat waves, wildfires, and more. Depending on the severity, the city must decide to resist, absorb, or restore accordingly.

To guide the complex response to climate change, the city has developed a Climate Adaptation Strategy (CAS), which was adopted by council in 2015 and given the Minister's Award for Environmental Excellence in 2016. This strategy informed the climate adaptation approach used in the City of Thunder Bay's 2018 Official Plan, which demonstrates a commitment to making climate change adaptation part of every planning decision. Policies calling

for active transportation, higher-density development, and adaptive stormwater management are but a few of the directives that holistically guide the city towards broader resilience.

A COMMITMENT TO GREEN INFRASTRUCTURE

Several studies have shown that local governments can save money by incorporating adaptation actions into regular infrastructure-upgrade cycles. Some estimates indicate that every dollar invested in adaptation today will lead to savings of between \$9 and \$38 in the future, and in some cases, incorporating climate change adaptation measures into new infrastructure adds just five per cent to construction costs.²

Part of the CAS is a commitment to green infrastructure, with the city taking an active role in developing low-impact development facilities (LIDs) on both public and private properties. Many underutilized public spaces have been repurposed as natural stormwater retention and filtration facilities, providing functional, ecological, and aesthetic benefits to surrounding neighbourhoods and the city as a whole. Moving forward, the potential for integrating green infrastructure will be considered for all public works projects.

On private lands, rain gardens and other LIDs are increasingly part of the urban fabric. City planners, engineers, and landscape architects work directly with developers to seek opportunities to implement rain gardens and naturalized retention ponds through site plan control. The city also offers a rebate program to cover the construction costs. The result is a growing number of rain gardens across the city, and the momentum continues to build.

While there are many benefits of green infrastructure, one important factor is that it increases in value with time. As



02

trees and plants grow taller, their roots grow deeper and the overall stormwater offset is increased. This contrasts with hard, grey infrastructure that depreciates from its first day. When deciding which infrastructure asset investments to make, the conversation is evolving from whether or not we can afford to invest in green infrastructure, to the realization that we cannot afford not to.

Through proactive action, the City of Thunder Bay will achieve its climate adaptation goals and simultaneously realize a host of community benefits, including economic development, community health and wellness, and the continued development of a sustainable and liveable city for decades to come. (V)

Notes:

¹ Canadian Climate Change Scenarios Network Localizer Reports for Thunder Bay, Ontario. Report generated by ICLEI Canada. January 24, 2013.

² Alexander, C. and McDonald, C. (2014). Natural Catastrophes: A Canadian Economic Perspective. TD Canada Trust, TD Economics, April 2014. Retrieved from the TD Canada Trust website: <https://www.td.com/document/PDF/economics/special/NaturalCatastrophes.pdf>



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Tracking greenhouse gas emissions in London

BY JOHN FLEMING, RPP, AND KELLY SCHERR



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City of London staff have 15 years of experience in maintaining and updating the community GHG-emissions inventory annually, using in-house staff, readily available software, and low/no-cost data provided by local utilities, Statistics Canada, and private-sector sources.

The ability to produce an updated GHG-emissions report annually at a low cost has been a key resource for London's Community Energy Action Plan (CEAP, London's version of a climate change plan), as well as for other sustainability initiatives, such as London's active transportation programs and multi-sector public reporting on our progress for GHG-reduction targets.

BACKGROUND: IT STARTED OVER 20 YEARS AGO

The methodology used for London's annual GHG-emissions inventory builds upon two foundational energy-use and GHG-emissions reports, specifically:

- The 1995 *City of London Air Emissions Study*, prepared by SENES Consultants in association with Proctor and Redfern Limited and Torrie Smith Associates: This study provided the baseline inventory for the community (1990) and municipal operations (1992).
- The London Energy/Air Emissions Reduction Strategy Task Force report in March 2000, titled *Air Emissions and*

Energy Use in the City of London: This report revised the 1990 community baseline inventory and provided an update using 1998 data. It also provided an emissions and energy-use, business-as-usual forecast for 2001, 2006, 2012, and 2016.

Since 2003, the community energy-use and GHG-emissions inventory has been maintained and updated annually by City of London staff.

The methodology employed is consistent with the GHG-emissions inventory protocol provided by ICLEI Canada for participants in the Federation of Canadian Municipalities' Partners for Climate Protection (PCP)

01 The City of London's GHG-emissions inventory is updated annually using data from six external sources, including London Transit, and is a key resource for London's Community Energy Action Plan as well as other sustainability initiatives.

02 For most cities in Ontario, including London, the transportation sector is the number one generator of GHG emissions.

program. The 2012 *Community Energy & Greenhouse Gas Inventory: Challenges & Opportunities* report was reviewed by ICLEI and Federation of Canadian Municipalities staff as part of the City of London's Milestone 5 recognition for the PCP program, the highest milestone possible.

“London residents and businesses spend about \$1.5 billion annually on energy: almost 90 per cent of the expenditure leaves the local economy.”

SOURCES OF DATA

The City of London relies on six external sources of information for its GHG-emissions inventory:

- 1) London Hydro's electricity-use data by customer class
- 2) Union Gas's natural gas-use data by customer class
- 3) Kent Group's retail transportation fuel-sales data for gasoline and diesel in London
- 4) London Transit's diesel fuel-use data for public transportation
- 5) Statistics Canada's provincial energy end-use data, prorated by population, for non-retail transportation fuels (e.g., freight transportation), as well as minor fuels, such as propane and fuel oil
- 6) Canada's National Inventory Report for GHG-emission factors

Emissions from London's active and closed landfills are estimated based on the Scholl Canyon landfill gas-generation model, which uses historical data on waste quantities placed within the landfills for each calendar year, as well as emission

reductions associated with the landfill-gas collection and flaring system, which is based on continuously measured landfill-gas flow rate and methane concentration at the landfill flare.

For transportation, using retail fuel-sales data has a number of benefits compared to other transportation emission-estimation methods, such as transportation planning trip-generation data:

- Retail fuel-sales data is available on an annual basis;
- Trip-generation modelling focuses on morning and afternoon weekday peak travel-demand periods and does not capture discretionary trips;
- Retail fuel-sales data is better able to reflect the impact of driver choices and behaviours, such as vehicle idling, aggressive driving, and vehicle choice;
- Using retail fuel-sales data is easier to explain; and
- Purchasing retail fuel-sales data is inexpensive: under \$200 per year for the City of London.

Keep in mind that for most cities in Ontario, the transportation sector is the number one generator of GHG emissions. The more municipalities know about this challenge, the more they can focus on solutions.

WHY MUNICIPAL STAFF SHOULD MAINTAIN GHG INVENTORIES

The math involved for calculating annual GHG emissions from energy use is not difficult: simply multiply the amount of each energy commodity used with the GHG-emission factor for that energy commodity, and then add these up. These calculations have been managed using standard spreadsheet software, such as Microsoft Excel.

Maintaining our own community GHG-emissions inventory provides staff with the



ability to modify and adapt the inventory as needs arise in a timely fashion. Examples from our experience include: using energy-consumption data to estimate total annual energy costs to bring in the economic aspects of energy-use and GHG-emission reductions; and estimating average household energy use, energy costs, and GHG emissions for use in public education.

Tracking annual emissions over time also allows city staff to develop a narrative to explain longer observed trends and what may be driving these trends, such as energy prices, economic trends, energy policies, and weather. Moreover, tracking emissions annually is required to measure progress towards London's targets for GHG-emission reduction.

What hits home for many is that London residents and businesses spend about \$1.5 billion annually on energy: almost 90 per cent of the expenditure leaves the local economy. The GHG-emissions inventory shines a light on this each year and focuses on the need for more energy efficiency and the need to use less fuel at the pump and invest more effectively in local services and products.

City staff spend about 40 person-hours every year updating the community GHG-emissions inventory spreadsheet. We feel the value of keeping this knowledge base in-house has been worth the time investment. Most importantly, having a GHG-emissions inventory is essential for current and future planning and actions. ♻️



John Fleming, MCIP, RPP, is a member of OPPI and Managing Director of Planning and City Planner for the City of London. **Kelly Scherr, P.ENG., PTOE, MBA, FEC**, is Managing Director and City Engineer, CAO, Regional Water Supply, Environmental and Engineering Services, and City Engineer for the City of London.



“Waterloo Region is dedicated to ensuring that work is progressing”

© The Cora Group

01

URBAN

New models for working together in Waterloo Region

BY KATE HAGERMAN, RPP

As the proverb says, it takes a village to raise a child. In Waterloo Region, we believe it takes a whole community to respond to climate change. Whether it is planning adaptive actions, setting GHG-reduction targets, developing energy-investment strategies, starting innovative businesses, or conducting research that influences the world, many people and organizations gather around the table. Key players come from all community sectors.

MUNICIPALITIES

The region’s environmental sustainability specialist, along with staff in various departments, works on corporate sustainability and provides services that affect long-term sustainability. Several larger municipalities also have staff dedicated to corporate sustainability, as well as staff whose work is impacted by, or can impact, climate change.

Municipal services across the board are evolving in response to current and future effects of climate change; for example, community planning, neighbourhood development, waste management, transit, transportation, water services, stormwater

management, emergency response, public health, social housing, economic development, parks and trails – the list goes on and on.

LOCAL UTILITIES

Local utilities are at the centre of many energy-related initiatives: promoting conservation, advocating for new technologies and processes, and planning for short-term and long-term impacts. Within the region, active collaborators include KW Hydro, Energy+ (Cambridge), Waterloo North Hydro, Union Gas, Kitchener Utilities, and Grand River Energy, a joint venture created to enable development of distributed energy systems.

COMMUNITY ORGANIZATIONS

Many “home grown” organizations are innovating and leading change. Sustainable Waterloo Region assists organizations in achieving carbon reductions and enhancing operational sustainability. Reep Green Solutions helps residents live sustainably and address climate change through energy efficiency and stormwater management. Green Economy Canada supports the development of local hubs that engage

01 Evolv1, Canada’s first net-positive energy office building, is developed, owned, and operated by the Cora Group.

business to drive the sustainable economy across Canada. Divest Waterloo promotes fossil-free investing, and CycleWR and TriTAG promote transit and active transportation. Waterloo Region Nature and the Grand River Environmental Network focus on natural heritage conservation.

POST-SECONDARY INSTITUTIONS

A wealth of climate change-related research and development is underway at the University of Waterloo, for example:

- The Waterloo Institute for Sustainable Energy explores technological and policy innovations to enable a shift to clean energy.
- The Waterloo Centre for Automotive Research researches hybrid- and electric-vehicle improvements and vehicle-automation systems.
- The Water Institute explores water science, technology, and policy.
- The Interdisciplinary Centre on Climate Change advances understanding of the physical science behind climate change.
- The Intact Centre on Climate Action researches ways to protect Canadians from extreme weather.
- The Centre for Ecosystem Resilience and Adaptation focuses on the environmental-degradation crisis.
- The Waterloo Global Science Initiative enables collective action on the world's most pressing challenges.
- Partners for Action advances flood resiliency in Canada.

Wilfrid Laurier University offers expertise in social and environmental justice and sustainability and entrepreneurship, while the Balsille School of International Affairs focuses on global governance. Conestoga College supports applied research through such initiatives as the Centre for Smart Manufacturing and Digital Innovation and Advanced Recycling Technologies for Waste Electrical and Electronic Equipment Lab.

PRIVATE SECTOR

The Waterloo Region Economic Development Corporation describes the region's private sector as an "ecosystem of dynamic collaboration." Private-sector examples include industry start-up incubators, namely, the Accelerator Centre, Velocity, and Launchpad, as well as innovation hubs: Communitex, Communitex Data Hub, and Catalyst137. The insurance industry (Intact Financial Corporation, The Co-operators, and Farm Mutual Reinsurance Plan) has also been a co-founder and funder of climate-related initiatives.

GOING FORWARD

Waterloo Region has taken an approach to addressing climate change that recognizes the complexity and breadth of connections, resources, and responsibilities across all community sectors. We have chosen to work collaboratively with many partners, share leadership, and encourage every sector to make advances based on their influence and expertise. Waterloo Region is dedicated to ensuring work is progressing, initiatives receive the attention and resources they require, and climate change-related actions are multi-faceted and developed with full community support. ♻️

→ INNOVATION AND COLLABORATION

Waterloo Region has chosen to work collaboratively, often developing new models of working together. The following four initiatives showcase the variety of collaborative undertakings in the region.

EVOLVGREEN

EvolvGREEN is a collective workspace for entrepreneurs, researchers, and clean economy supporters and is backed by the Accelerator Centre, the City of Waterloo, Laurier, the Region of Waterloo, and the University of Waterloo. The pioneering workspace is located in Evolv1, Canada's first net-positive energy office building. The multi-tenant building, developed by the Cora Group and officially opened in 2018, was collaboratively envisioned by Sustainable Waterloo Region, the Cora Group, and the David Johnston Research + Technology Park, with EY Canada as the anchor tenant. The space is also home to the TD Sustainable Future Lab, which will support 40 cleantech start-ups over the next five years.

COMMUNITY ENERGY INVESTMENT STRATEGY (CEIS)

The Region of Waterloo, in collaboration with the three cities and five local electric and natural gas utilities, has developed CEIS to improve and sustain economic competitiveness and quality of life through the coordination of targeted energy investments. The strategy aims to improve significantly the energy performance of buildings, enhance local energy generation and security, transition to a low-carbon transportation network, and cultivate and support an innovative environment for energy investment.

ClimateActionWR

This community-wide collaborative organization has roots back to 2010 and is co-funded by municipalities and local utilities. ClimateActionWR coordinates target setting for GHG reduction and climate action planning, including establishing cross-sector dialogue, facilitating collaborative opportunities, and monitoring and measuring progress. The local target GHG-emission reduction was initially set at six per cent below 2010 levels by 2020. Planning is now underway to meet a new target of 80 per cent below 2010 levels by 2050.

COMMUNITY-WIDE CLIMATE ADAPTATION PLANNING (CCAP)

The region, working with the International Council for Local Environmental Initiatives Canada and a broad range of community stakeholders, is working to increase community resiliency by identifying practical measures to reduce local vulnerabilities and risk to extreme weather events and changing climate conditions. The three-year planning process is nearing final stages and will result in a plan shaped by local expertise in infrastructure, emergency planning, ecology, social services, agriculture, business, and more.



Kate Hagerman, MCIP, RPP, is a member of OPPI and Manager of Environmental Planning and Sustainability for the Region of Waterloo.



© City of Windsor

01

URBAN

Combatting heat in parks and basement flooding in Windsor

BY KARINA RICHTERS

Like many cities in Ontario, the City of Windsor has already faced several climate change-related challenges. The city is one of the hottest in Canada, often exceeding 30°C (40°C with humidex) during the summer months. Looking to the future, climate change projections suggest Windsor will exceed 30°C on 72 days per year by the 2080s.

In 2016 and 2017, the city was hit with major flooding due to intense rain, resulting in over 8,500 residents reporting basement flooding. Precipitation events are expected to become more intense and extreme. Projections show a 25 per cent increase in intensity for 10-year storms and a 40 per cent increase in intensity for 100-year storms by the 2090s.

City of Windsor administration has been working hard to minimize climate change

risks to the community. Council approved a Climate Change Adaptation Plan in 2012. In addition to other actions, the following two projects show practical success through collaborating across disciplines and educating the public to combat heat and flooding risks to the community.

IMPROVING THERMAL COMFORT IN CITY PARKS STUDY (2013)

City staff have worked to identify design factors that increase temperatures in our parks and public spaces. Armed with a thermal camera, a student visited six city parks (two neighbourhood, two community, and two regional) to measure temperatures of various park features on moderate temperature days (see Table 1).

The extremely high temperature of the dark rubber matting underneath play

PARK FEATURE	TEMP. (°C)
Soccer field, grass cover, no shade	28.9
Asphalt path	45.6
Dark rubber matting under play structure	71.6
Sand underneath play structure	45.5
Naturalized area beside stormwater pond	22.8

Table 1: Recorded temperatures of parks features on a sunny, 22 °C day with 67 per cent humidity at one City of Windsor park.

- 01 A thermal image (inset) of Captain John Wilson playground demonstrates the extremely high temperature of the dark rubber matting underneath play structure.
- 02 A new shade structure, including shaded seating areas, has been installed in Windsor's Rotary Park as a result of the study to improve thermal comfort in city parks.

structures was observed in multiple parks. Although rubber matting has many benefits, including accessibility and safety for falls, this study exposed the real impact of park design on thermal comfort and heat risks for children, who are a vulnerable population for heat-related health issues.

Fortunately, a number of remedies are available, including:

- Locating new play structures in areas with mature trees;
- Planting trees around play structures to provide shade and reprieve from heat in the future;
- Installing artificial shade structures, including temporary shade canopies over play structures;
- Considering playground features with covered areas;
- Installation of lighter colour rubber matting;
- Increasing the number of splash pads at city parks; and
- Installing water fountains and water bottle-refill stations at parks buildings, where available.

Since 2013, the City of Windsor Parks Department has integrated thermal

comfort features in more than 12 city parks, including the installation of new shade structures (7), shaded seating (3), splash pads (3), and water fountains (2). The forestry department has also strategically planted trees around 27 new playgrounds to provide future shade.

“...climate change projections suggest Windsor will exceed 30°C on 72 days per year by the 2080s”

Many of the recommendations made in the thermal comfort study have been incorporated into the 2015 Parks Master Plan, which recognizes the important role of city parks to build resilience to the expected heat and flooding impacts of climate change.

CLIMATE RESILIENT HOUSE (2018)

The City of Windsor owns a two-story, 1920s-era house located in an area served by a combined sewer, which is a sewer designed to handle stormwater and sanitary sewage. Administration saw a great opportunity to retrofit this house to

reduce the risk of basement flooding using programs available to the public. Improvements to the house have included installation of a sump pump and backwater valve, landscaping changes to improve drainage on the property, disconnection of the downspouts and installation of rain barrels, and the construction of a rain garden and infiltration trench.

In addition to completing the flood-mitigation measures, communications staff video-taped the projects to show the public, step by step, how to complete this work. The video and a description of the project have been posted to the city's website. Staff are in the process of setting up open houses, so the public can see the improvements first-hand and discuss the process with city staff. By highlighting tangible, non-invasive, and inexpensive flood-mitigation measures on an average Windsor home, we hope to encourage residents to replicate the measures on their own properties.

Health Canada provided technical and financial support for many of the city's thermal comfort studies, while the Ontario government provided some financial support for the creation of the Climate Resilient House.

It is important to note that the collection of temperature data in parks, as well as many of the retrofits to the Climate Resilient House, were not expensive endeavours. In addition, a multi-disciplinary team approach was used in both projects to ensure city departments were informed of new information and actions continue to be implemented moving forward.

These projects are highlighted on the city's website: www.windsorenvironmentalmasterplan.ca. Please feel free to contact City of Windsor Environment and Climate Change staff for more information. ☺



02



Karina Richters, M.A.Sc., P.Eng, is the Supervisor of Environmental Sustainability and Climate Change for the City of Windsor.



RURAL

The Wawa Energy Plan: A small northern community's effort to prepare for the climate ahead

BY MAURY O'NEILL

- 01 The energy plan developed for Wawa, a northern community of 2,900 residents, was named the 2017 Community Project of the Year by the Ontario Sustainable Energy Association.
- 02 The Wawa Energy Committee led the energy-plan process, including community engagement efforts.

Without the perseverance of concerned residents and funding from the Ontario Government, the community of Wawa would not have embarked on a two-year planning process to complete its award-winning Wawa Energy Plan.

Strong reasons existed for the northern community of 2,900 residents to be concerned about its energy future, including rising energy costs and the economic, social, and environmental benefits that would result from reducing GHG emissions.

Without access to natural gas, the majority of households in Wawa primarily heated their homes with either polluting fossil fuels or expensive electricity. Economic Development Wawa estimated that over \$6 million flowed out of the local economy in 2014 to purchase energy. According to 2014 data, Wawa's electricity rates were the third highest in the province, and taxpayers were demanding

that local government take action to reduce energy costs.

Other motivators contributed to the undertaking of the Wawa Energy Plan, including Ontario government policy and programs outlined in the Ontario Green Energy Act (2009) and Ontario Climate Change Strategy (2015).

DEVELOPING THE PLAN

With support from the Ministry of Energy's Community Energy Plan (MEP) funding program, the Municipality of Wawa appointed a strong planning team, which included the mayor, economic development chair, a local utility representative from Algoma Power Inc. (API), and other respected community members. The Wawa Energy Committee led the four-stage energy plan process between 2014 and 2016. Funding of \$37,500, which represented 50 per cent of the plan's cost, was used to hire EDC staff to complete the plan, rather than hire an out-of-town consultant.



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Stakeholder consultations were critical to developing the plan and were held throughout the process. Stage one focused on building awareness of the true cost of energy and local energy opportunities from a wide range of stakeholders. Engaging the community took effort and time with over

125 consultations. This included launching Wawa Green Days, a week-long education and activity event to promote energy conservation programs and youth activities, an event that continues to be held annually.

Stage two resulted in the development of a baseline energy-use study focused on electrical energy use in Wawa's municipal, residential, and industrial areas over a two-year period, 2013 and 2014, the only years data was available from the electrical distribution supplier, API. Energy maps highlighted how much and where electrical energy was being used in the community.

Final stages of the Wawa Energy Plan included identifying high-priority actions for implementation from a list of over 48 actions recommended by stakeholders. A "Top-Ten" action plan was set-out in an implementation strategy, which was executed quickly to maintain momentum once council approved the plan in January 2016. This included accessing a \$220,000 grant from the Ontario Trillium Foundation to hire staff to implement recommendations.

GETTING COMMUNITY BUY-IN

Lessons learned were many over the course of the plan's creation. Very early in the process, it became apparent that the positive impacts the plan – countering the effects of climate change and reducing GHG emissions – would not be the driving force behind community engagement and buy-in. However, promoting the plan's benefits to the local economy and wallets of homeowners did result in community buy-in. The plan's final recommendations largely centred on small shifts in resident behaviour, such as the use of rain barrels and composters, as well as bio-swales

to divert untreated stormwater from the town's sole source of drinking water.

Funding support is critical for small, northern, and rural communities to develop energy plans. Although provincial support for anything related to Climate Change appears to be over, programs, like

“Wawa’s electricity rates were the third highest in the province, and taxpayers were demanding that local government take action to reduce energy costs.”

the Canada Gas Tax Fund, Federation of Canadian Municipalities, and Independent Electricity System Operators, continue to support local governments and First Nation communities in completing energy plans.

The Wawa Energy Plan was named the Community Project of the Year by the Ontario Sustainable Energy Association and was the primary reason Wawa was selected as one of four Ontario communities to pilot the Modern Wood Heat program in 2018. The Wawa community continues to update its energy plan and prepares for the climate to come. 



Maury O'Neill, M.P.L., was CEO of Wawa Economic Development from 2003 until early 2019. She is currently CAO/Treasurer for the Municipality of Wawa.

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West Don Lands Public Realm

NGO

Planners championing natural asset management help prepare cities for climate change

BY MICHELLE MOLNAR AND ROY BROOKE

The United Nations' recent warning that the world has at most 12 years to prevent a climate change catastrophe is the starkest yet. Cities, in particular, are the front line in the fight to avoid irreversible damage through mitigating and adapting to climate change. Professional planners are pivotal to efforts, yet must operate within a context heavily constrained by challenges such as aging infrastructure, urban growth, and strained budgets. Increasingly, it appears that municipal natural asset management is an important strategy for them to address this multifaceted problem.

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In local governments, the term “asset” usually refers to engineered infrastructure, such as roads, bridges, water treatment plants, and drainage pipes, that provides municipal service. To the extent that nature is considered by local government staff, it has typically been only for green, aesthetic, or recreational amenities. Even though it is often ignored or undervalued in local government financial and

“...natural assets can provide the same services as their engineered counterparts and often at lower costs”

asset management practices, nature performs many functions that fall within the realm of municipal services. For example, forests, wetlands, and green spaces can provide core services, such as water storage and filtration or rainwater management. From a service perspective, therefore, healthy natural assets are, in many cases, no different than engineered infrastructure.

NATURAL ASSETS AS INFRASTRUCTURE ALTERNATIVES

The Municipal Natural Assets Initiative (MNAI) helps local governments seize the opportunity presented by healthy natural assets by teaming up to develop resilient, long-term infrastructure alternatives.



© Town of Oakville

01, 02 Nature performs many functions that fall within the realm of municipal services. For example, forests, wetlands, and green spaces can provide core services, such as water storage and filtration or rainwater management.



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MNAI employs practical strategies to value nature's ability to provide municipal services and incorporates this information into mainstream asset management systems that local governments are obliged to adopt.

The evidence from a growing number of Canadian communities is that natural assets can provide the same services as their engineered counterparts and often at lower costs. MNAI's first national pilots, for example, show that natural assets provide the same level of stormwater management

services as their engineered counterparts and meet at least the 100-year flood storage requirements. Moreover, the value of their natural assets were shown to increase under climate change scenarios because of greater resiliency and adaptability than other infrastructure solutions.

MNAI uses standard asset management practices that typically require the involvement of staff from almost all local government departments and disciplines. Planners, given their highly interdisciplinary roles, are particularly well placed to support the uptake of municipal natural asset management. Based on MNAI research* in Ontario, planners can:

- Help local governments to conceptualize natural assets as providing valuable and concrete services
- Articulate and leverage existing responsibilities in planning policies to protect natural features
- Revise official community plans to create

or support enabling conditions for municipal natural asset management

- Leverage their involvement with land-use plan and land-use bylaw preparation to protect and maintain natural assets.

Building climate-resilient cities requires many strategies; evidence is growing that municipal natural asset management should be amongst them. ☺

*More information: <https://mnai.ca/professional-planning-practice-in-ontario/>



Roy Brooke is the Executive Director of Municipal Natural Assets Initiative. **Michelle Molnar** is the Technical Director, Municipal Natural Assets Initiative and Environmental Economist and Policy Analyst, David Suzuki Foundation.

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NGO

An urban watershed approach to climate resilience

BY CHANDRA SHARMA, RPP, AND JOHN MACKENZIE, RPP

The Conservation Authorities Act of 1946 was enacted by the Province of Ontario in response to concerns that many of the province's renewable natural resources were in an unhealthy state due to poor land, water, and forestry practices. In 1954, Hurricane Hazel helped convince decision makers of the need for a body to oversee management of water-related hazards in the growing region around Toronto. This resulted in the amalgamation of smaller conservation authorities into the Metro Toronto and Region Conservation Authority in 1957.

It was a unique innovation in environmental governance of the day, and investment in conservation authorities in Ontario has paid huge dividends over the past decades. Progressive hazard-management programs have led to greater resilience, resulting in less damage to human life, property, and infrastructure due to

01 For the San Romanoway Revival Project in the Jane and Finch neighbourhood in Toronto, SNAP converted three hectares of underutilized, privately owned public spaces into a vibrant community hub that also achieves strategic sustainability, resiliency, and socio-economic objectives. It includes urban agriculture supported with rainwater harvesting, hundreds of native trees, pollinator gardens, educational signage, shade structures, and community amenities. Formal skills training and green job opportunities are offered to residents on these grounds.

02 Green-roof development is another example of how privately owned space can be converted to achieve strategic sustainability, resiliency, and socio-economic objectives.



02

frequent extreme weather than would have been the case. In addition, across the 36 provincial conservation authorities, the province has an exceptional cohort of professionals capable of addressing climate risks and vulnerabilities.

STRATEGIES TO COPE WITH WEATHER EXTREMES

Climate change is exacerbating many of the risks that currently exist due to the already high degree of urbanization in our watersheds. Infrastructure, historic built form, and greenspaces have already been impacted by weather extremes.

So how do we cope with new risks from weather extremes? Municipalities are at the forefront of dealing with ground-level impacts and are being supported by conservation authorities with sound science, technical advice, and best practices to enhance community resilience and mitigate risks.

Managing future growth on a watershed scale is a proactive adaptive-management approach embraced by conservation authorities. To address additional risks from weather extremes, Toronto and Region Conservation Authority (TRCA) watershed-management programs focus on integrating several climate strategies. Some examples include:

- **Development of climate information** (historic climate trends and future projections) at a local and regional scale to support municipalities and regional agencies with a better understanding of climate risks and vulnerabilities. This and other leading-edge climate information is being mobilized through a partnership project with academic institutions

called the Ontario Climate Consortium (climateconnections.ca).

- **Assessment of climate impacts on a watershed scale** through next-generation watershed plans. These include extensive modelling to determine impacts of new growth and climate on proposed and existing settlement areas and associated infrastructure, such as the work currently being undertaken for the Carruthers Creek Watershed Plan, led by the Regional Municipality of Durham and TRCA.

“...sustainable, resilient watersheds are key factors in urban growth and redevelopment”

- **Regional scale modelling of natural heritage** across TRCA’s jurisdiction to assess the effects of climate change on natural heritage. Work in Peel Region has demonstrated that urban areas with less natural cover are the most vulnerable to climate change and extreme weather. To assess vulnerability, the model considers conditions such as poor habitat connections, low natural cover, high ground-surface temperatures, poor soil drainage, etc.
- **Comprehensive assessment** for the 41 historic flood-vulnerable areas in the region to combine current riverine flood-hazard information and flood exposure to calculate vulnerability and quantify risk. This leading-edge work will result in updated inundation mapping for our stakeholders and a ranking of TRCA’s

41 historic flood-vulnerable areas. This project also provided updated damage estimates and cost-benefit analysis of flood remediation capital works and informed site-specific emergency planning. With support of our partners, including all levels of government, several flood-remediation projects are currently underway.

- **An integrated approach to stormwater management**, which blends grey and green infrastructure and integrates low-impact development technologies for new water-management regimes, is being implemented through the Sustainable Technologies Evaluation Program, jointly managed by TRCA, Credit Valley CA, and Lake Simcoe CA (sustainabletechnologies.ca).

- **New approaches to avoid risk** are being recommended for greenfield development, such as securing and adequately buffering and intensively managing greenspace systems and incorporating green infrastructure on the periphery to maintain valuable ecosystem services. Redevelopment of urban areas is supported by remediating flood and erosion hazards and improving functions of natural features.

- **Transformative programs**, such as Sustainable Neighbourhood Retrofit Plans (SNAP) and Partners in Project Green: A Pearson Eco-Business Zone, are being implemented to support the resiliency of residential communities and industrial/commercial/institutional (ICI) lands within our watersheds (partnersinprojectgreen.com). See SNAP case study on next page.

- **TRCA is also making certain that lands in populous areas** with high agricultural and recreational values, versus ecological

values, are available for local food/urban agriculture initiatives to solidify support for the agriculture sector and local food movement.

• **Naturalization of the mouth of Don River** has been identified as a key priority in the Don Watershed Plan. It is a major step in linking city building directly with the natural environment. The newly created Don Mouth habitat will reduce flood risk and become central to the creation of new, sustainable communities in downtown Toronto. This linkage of flood protection to city building and revitalization is a direct manifestation of the partners’

understanding that sustainable, resilient watersheds are key factors in urban growth and redevelopment.

Watershed-based management has enabled innovation and work on an appropriate local and regional scale to develop practical solutions to current and emerging issues (e.g., flood management, drinking water and Great Lakes water quality, climate change, rapid urbanization/growth). Over the past seven decades, conservation authorities have become critical implementers for a number of provincial and municipal goals related to natural resource management and protection of the natural environment.

The importance of this critical work and its support by all levels of government has never been more important than now. 



Chandra Sharma, MCIP, RPP, is a member of OPPI and Director of Community Engagement and Outreach at the Toronto and Region Conservation Authority. **John MacKenzie, M.Sc. (PI), MCIP, RPP**, is a member of OPPI and Chief Executive Officer of Toronto and Region Conservation Authority.

→ CASE STUDY

SNAP: Climate Action

TRCA'S SUSTAINABLE NEIGHBOURHOOD ACTION PROGRAM (SNAP) is a proven solution for sustainable urban renewal and climate action that places neighbourhoods at the centre of the implementation framework. It helps municipalities improve efficiencies, draw strong community support, and build trust for long-term engagement as a broad range of sustainability and resiliency initiatives are implemented in the public and private realms.

Comprehensive Neighbourhood Action Plans inform how climate actions can be integrated with ongoing sustainable urban renewal to achieve greater co-benefits. Through partnerships with municipalities, local organizations, residents, and business, SNAPs advance four main action areas: multi-objective residential retrofit programs; revitalization of the multi-unit residential, commercial, and institutional sectors; innovative public infrastructure renewal to maximize social and sustainability objectives; and community development.

Examples of resiliency initiatives implemented by SNAP include:

- Flooding protection measures and better lot-level management of stormwater to address high volumes of runoff and flooding.
- Planting trees, planting edible vegetation on balconies, and constructing shade structures to address rising temperatures and urban heat island effects.
- Rainwater harvesting to alleviate water shortages.
- Energy efficiency and sustainable transportation to support infrastructure resiliency.
- Fostering community connections, facilitating increased local food production, and generating work opportunities within the neighbourhood to increase community resilience.



© Toronto and Region Conservation Authority

By monitoring biofilter swales in Brampton's County Court, SNAP shows improved water quality and temperature. Green infrastructure retrofits such as this help manage run off from more frequent storms, reduce impacts of urban heat stress, and help restore water balance and biodiversity to the built environment.

In 2019, TRCA is bringing together community stakeholders, the City of Brampton, and the Region of Peel to create a neighbourhood-scale vulnerability assessment and climate adaptation strategy for its County Court SNAP neighbourhood. The study will downscale and refine municipal-scale vulnerability assessments by drawing on community experience, local knowledge, and perceptions of risk to identify vulnerabilities. The adaptation strategy will contain mapping and identification of key climate impacts (e.g. heat waves, electrical outages, floods) on community services and assets, along with adaptive management opportunities. Engaging community leaders in this process will build capacity for local action.

01 V2 is a rear-lane secondary suite designed to work within the newly approved City of Toronto Laneway Housing guidelines.

BUSINESS

R-Hauz: Affordable, mid-density housing that's energy efficient to build and live in

BY CAROLYN CAMILLERI



“Storm management is built in, with groundwater infiltration an important part of the R-Hauz concept”

© R-Hauz Solutions Inc.



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Leith Moore has worked in land development and home construction since 1981. As president of Waverley Projects Inc., his focus is creative ground-oriented infill development and mid-rise transit-oriented development in the Greater Toronto and Hamilton area.

“My favourite projects are the industrial-to-loft residential conversions,” says Moore.

For example, Broadview Lofts is a 104-unit condominium conversion of a 1914 industrial warehouse. A distinctive feature of the seven-storey building is the water tower that stands high above the roof.

“Putting that water tower back on top of Broadview Lofts was the biggest high,” says Moore.

In addition to leading Waverley Projects, Moore co-founded R-Hauz Solutions Inc. in 2018. The problem R-Hauz seeks to solve: the missing middle.

“We have been locked into a paradigm of good planning policy for intensification that has not found an expression in outcomes anywhere except in high-rise projects,” says Moore. “We feel there is a large part of the market that wants an affordable and liveable option of either low-rise suburban houses, semis, and towns or small high-rise condominium apartments.”

Moore says he and his colleagues at R-Hauz don't see the lack of mid-density development as a lack of market desire, but rather as an inability of the industry to deliver a desirable product within the

framework of a traditional land assembly, zoning process, and building process. Not that it hasn't been tried. Moore says there is a legacy of failed attempts at mid-density projects “...that took too long to be approved, cost too much to build, and absorbed a greater degree of human and capital resources than a tried-and-true high-rise.”

Meanwhile, Moore saw major transit corridors that were underdeveloped and a construction industry that had not innovated or improved its productivity for many decades.

ENTER R-HAUZ

R-Hauz makes BIM (building information modelling) prefabricated, manufactured structures. Currently, R-Hauz produces two models of secondary-unit, laneway homes, as well as a six-storey, mass-timber, infill structure that can be configured in various ways. Both products offer exterior choice with structural repeatability for cost certainty. The prime R-Hauz market is property owners whose housing needs have changed but who don't want to sell the asset.

“We take the land cost out of the equation and put self-solving housing solutions directly into the hands of the consumer,” says Moore. “This is a very important evolution in building in Ontario.”

It allows gentle designation to occur by individual property owners when their lifecycle needs change. As families grow, parents age, or older children become independent, buildings can be modified to



© R-Hauz Solutions Inc.



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04



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05

- 02** Each unit floor has its own heating and cooling system and a combination of front and back of unit terraces, balconies, or French balconies for passive cooling and access to sunlight.
- 03** V2 models feature a range of one or two bedroom suites over a one or two (or no) car garage. Each unit has an electric car charging station.
- 04** Leith Moore is a graduate of the School of Urban and Regional Planning at the University of Waterloo and was an adjunct professor through 2016. He is past chair of both Building Industry and Land Development Association and Evergreen and past president of Ontario Home Builders Association, and he has served on two provincial advisory panels: one on transit investment and the other a land-use planning review. He is currently a member of the Ontario Greenbelt Council by appointment of the Minister of Municipal Affairs.
- 05** The area of each V2 is determined by the lot size and has been designated for lot widths of 20, 30, and 40 feet.

suit those changing needs or bring in rental revenue. And R-Hauz can meet consumer needs fast: one year from idea to install for V6 townhouses and four months for V2 laneway homes.

R-Hauz is drawing considerable consumer attention, including for use as retirement accommodation and co-housing, because the buildings are barrier-free and can be located in established neighbourhoods where services are within walking distance. While R-Hauz is also drawing some attention from the investor market, Moore says it's not as efficient if the land has to be purchased.

A GREENER WAY TO BUILD

The R-Hauz solution not only allows consumers to meet their own housing needs, but it also answers the climate action call for mid-density developments located along underdeveloped transit corridors and provides a greener way to build.

"R-Hauz is entirely about conservation of energy – our own human in addition to natural resources – and improved efficiency," says Moore.

R-Hauz has used an IPD (integrated project design) approach from the onset of concept designs.

"Our project construction team has been sitting with us for the past year as we undertook detailed design with our architectural, structural, and wellness consultants," says Moore.

A common criticism from the industry is that small is beautiful, but you cannot scale it. R-Hauz has countered that criticism by designing a product that is flexible in its exterior façade and interior use and configuration but is repeatable.

"We have found a way to scale a small build by using BIM technology and the IPD process to make 100 small builds appear like one large one to finance and trade interests," says Moore.

Structure, building code, mechanical and electrical systems, and smart building infrastructure are repeatable, and approval requirements are those set out by the city in their mid-rise guidelines.

"We are working with established planning policies – not working to change them," says

Moore. "Approvals are really centred where they should be – on exterior design and working with neighbourhood character."

Manufacturing is offsite so there is less waste in the building process than would occur in an onsite process. Because these are slab-on-grade structures, there is less digging and no long lines of idling trucks delivering concrete or removing materials. Disruption to the neighbourhood is reduced to a fraction compared to conventional construction. V6 townhouses are a five-month build onsite and V2 laneway homes are less than one month onsite.

"So it is less time and less noise overall, and the kind of noise we create is much less," says Moore.

A GREENER WAY TO LIVE

"We use a combination of enhanced envelope and insulation building standards to require a minimum energy footprint and use electricity as a decarbonization strategy," says Moore. "Our structure is a mass-timber, all-wood building – a superior solution with respect to carbon strategy."

Storm management is built in, with groundwater infiltration an important part of the R-Hauz concept. Other details include roofs that reflect rather than absorb heat, recycled grey water for toilets, electric car charging stations, and, as Moore says, "low-flow everything, LED everything"

Human-friendly features include terraces or balconies of six feet or more; quiet, energy-efficient, under-floor radiant heat and cooling; and exposed-wood ceilings and wooden stairways.

"There is much research now on wood and human emotions – we react well to it," says Moore. "Happiness is a design concept we need to come back to."

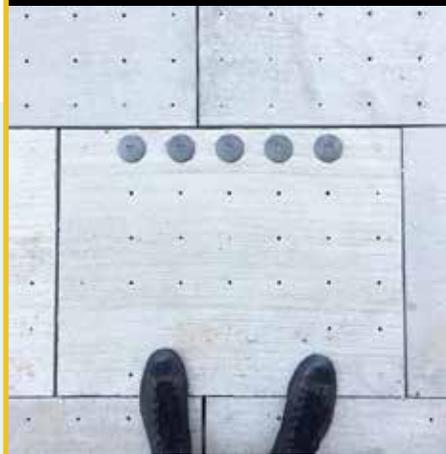
Light is also tied to well-being.

"Our units are through units – all of them – with windows front and back for passive cooling and more sunlight," says Moore.

In the townhouses, entry is direct from the elevator, which means no long dismal hallways.

The first R-Hauz V6 project started this past April in Toronto, while pilots for two models of the R-Hauz V2 laneway homes will be underway in late spring/early summer. (Y)

→ CLOSER LOOK



Climate Tile

Waverley Projects has entered into an agreement with Tredje Natur of Copenhagen to adapt Climate Tile to the Canadian market.

"Climate Tile is a permeable tile with storage built under its surface to hold back stormwater," says Leith Moore, president of Waverley Projects. "It can convey stormwater to infiltration beds for groundwater recharge. It can convey stormwater to planting beds for trees and urban landscapes. It can convey stormwater to cisterns for future use by the municipality for street cleaning. It can slowly release the balance once the storm surge in the roadway has passed."

Most permeable tiles are pavers with gaps around the edges so water can seep into granular material underneath. When those gaps fill with silt, they stop functioning. With Climate Tile, because it sits on top of a system, it can be opened up and washed out.

"Not only does it work, but it's beautiful," says Moore. "It's just lovely."

Climate Tile is currently being tested in Copenhagen and studied for compatibility with GTA-approval requirements. Once tests and refinements are complete, it will be entirely manufactured in Ontario for use on sidewalks, lanes, parking lots, and parking pads.

GLOBAL

Sweden: Taking climate change to new green heights

BY RADHIKA PANJWANI

In 2001, a team of architectural firms undertook an ambitious project to convert a derelict shipyard in Malmö, Sweden into a thriving carbon-neutral neighbourhood, consisting of a university, homes, offices, and shops. Powered entirely by the sun, wind, water, and food waste, Western Harbour, Malmö is just one of many sustainable hubs in Sweden, a country known as a world leader for practising environmental sustainability and reducing GHG emissions.

GHG-EMISSION REDUCTION

Sweden has the fastest rate of urbanization among European countries. In 2013, Swedish GHG emissions were 55.8 million tonnes of carbon dioxide, which is a 22 per cent reduction from its 1990 numbers (71.8 million tonnes). Meanwhile, during this time period, Sweden's GDP grew by 58 per cent.

“The Swedish territorial emissions of GHG have reduced a lot since 1990, and this is mainly due to the fact that we have never been dependent on fossil fuels for energy production,” said Hans Wrådhe, a senior advisor with the Swedish Environmental Protection Agency. “Hydropower and nuclear power have been the base in Swedish electricity production for a long time. Many of our homes are connected to district heating, which relies on heat from biofuels and waste incineration. This has made it easier for us to move away from fossil fuels. There's also heating from heat pumps driven by electricity.”

A district heating system uses local fuel or heat resources through a heat distribution network. A combination of heat recycling and renewable heat remains the heart of district heating systems in Sweden subdivisions.

Sweden's visionary city planning results from collaborations with government, developers, planners, national transport agencies, and others and aims to build communities that support walking, cycling, and travelling by public transit. This ensures dependency on cars is at a minimum, Wrådhe notes.

CARBON TAX: NO CONTROVERSY

Sweden is close to meeting its 2020 goal of reducing GHG emissions 40 per cent from 1990 levels. Experts are confident the country will accomplish this goal with some aggressive tactics.

In 1995, Sweden became one of the first countries to introduce a carbon tax. The excise tax placed on carbon fuels, such as oil and natural gas, has helped the country wean off fossil fuels. The carbon tax proved to be one of the least expensive – yet most

- 01 The Western Harbour is a district in Malmö that has in recent years undergone a complete transformation from an industrial area to a beautiful architectural neighbourhood with a sustainable focus.
- 02 As Swedish society has developed, the need for heavy industry within city limits has been reduced and the need for environmentally friendly living quarters for people has increased.



effective – initiatives for reducing CO² emissions, says Wrådhe.

In 2012, Sweden's tax revenue related to the environment was 2.52 per cent of the GDP, compared with the OECD country average of 1.54 per cent.

SETTING AN EXAMPLE

Several overarching reasons have contributed to Sweden's success with environmentally friendly measures. For starters, the country believes it can rely on a sustainable and secure energy supply by keeping its sight fixed firmly on long-term energy efficiency



02

as opposed to short-term gains.

Sweden also recognizes the value of investing in scientific research. Case in point: research and development expenditure represented 3.3 per cent of the country's GDP in 2013 – the fourth highest percentage among the OECD nations.

Environmental initiatives have spurred the makings of a climate economy in the Nordic nation. Swedes are demonstrating to the world that it is possible to strengthen a country's economy by embracing initiatives that are better for the environment.

Lastly, since 2005, Sweden has been offering tax relief to industries that consume large amount of power in exchange for reduced energy use.

But while Sweden has much to be proud of with respect to its environmental measures, Wrådhe acknowledges that more effort is needed.

"We have been quite successful in reducing territorial emissions of GHG but if you consider our contributions to global GHG emissions [as consumers], the picture is a bit different," Wrådhe said. "We contribute to global emissions when we eat beef produced

SWEDEN BY THE NUMBERS

- 99 per cent of Sweden's waste is recycled
- 54 per cent of energy comes from a renewable source
- 22 per cent reduction in Greenhouse Gas emission between 1990 and 2013
- 522 million allocated to UN Green Climate Fund for 2015-2018
- 80 per cent of electricity production from nuclear and hydro-electric power
- 40 per cent by 2020: GHG-reduction target from 1990 levels

Source: Swedish Energy Agency

in the Amazon or fly to Thailand, buy trousers made in Bangladesh or electronics produced in China. From that perspective, we have not reduced our GHG emissions, we have just moved them from Swedish territory to other parts of the world." ♻️

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The research team working with Kirby Calvert on the Renewable Energy Mapping Toolkit.

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A new tool to help planners make space for renewable energy

BY KIRBY CALVERT

Renewable energy development is imperative if we are to mitigate the worst effects of climate change and maintain a clean local environment. It also drives local investment, creating new jobs and income streams.

On the other hand, renewable energy systems introduce landscape impacts and land use trade-offs that need to be identified and managed. Think about solar panels covering what used to be an active farm, or wind turbines altering a natural view and introducing a new risk to birds and bats.

Recent changes to the regulatory regime guiding renewable energy development in Ontario has returned some control to municipalities over managing these trade-offs, presumably through the design of land use plans and by-laws.

In other words, municipal councils and local planners need to facilitate renewable energy development, while ensuring our local landscapes continue to provide food, habitat, and spaces for recreation. These responsibilities are unfamiliar to municipalities in Ontario, and very few resources are available to help councillors

and planners make decisions in this new role. My research team is developing a Renewable Energy Mapping Toolkit that will provide guidance.

RENEWABLE ENERGY MAPPING TOOLKIT

The Renewable Energy Mapping Toolkit combines structured map overlay techniques with participatory planning techniques and is best described in two phases.

In phase one, a geographic information system (GIS) is used to identify sites within a given area that can accommodate renewable energy systems under locally specific physical, regulatory, and economic constraints. Land use planners can work with their GIS staff to answer planning-level questions such as: Where can we develop renewable energy resources with minimal impact on our green spaces? How does our ability to produce renewable energy change if we increase or decrease the minimum distance that wind turbines must be located away from residential dwellings? Or if we decide to prohibit renewable energy development on all land currently zoned for agriculture?

In phase two, the toolkit provides guidance on how to incorporate these maps into community and stakeholder engagement activities. Using maps as a focal point for engagement activities is an effective way to connect the conversation to the spaces and landscapes that matter to people. At the same time, it provides them with detailed information about what is possible and what trade-offs need to be discussed in their specific community. Indeed, research has shown that local and participatory planning processes reduce public tensions around renewable energy development by leading to more thoughtful and inclusive development decisions.¹

One possible output that can be derived from our workflow is shown in **Figure 1**. Here, we have mapped an area of Kings County, Nova Scotia that is most technically suitable and most socially acceptable. This map was produced by intersecting the map outputs from the structured mapping process (phase 1 of the toolkit) with the map outputs of the participatory mapping process (phase 2 of the toolkit), which in this case involved 41 participants. This map can serve as the basis of writing land use plans and by-laws that make space for renewable energy.

These maps do not provide the answer but, rather, the information upon which to make informed decisions. Our structured approach would also allow for scenario

“... local and participatory planning processes reduce public tensions around renewable energy development”

testing: for example, measuring how much this area would shrink or expand with decisions about infrastructure setback distances or wildlife protections. Thus, the toolkit will provide the basis upon which municipal councils and planners can step up to the economic and environmental imperatives of facilitating local renewable energy development, while minimizing the impacts on existing land-based economies and ecosystem services.

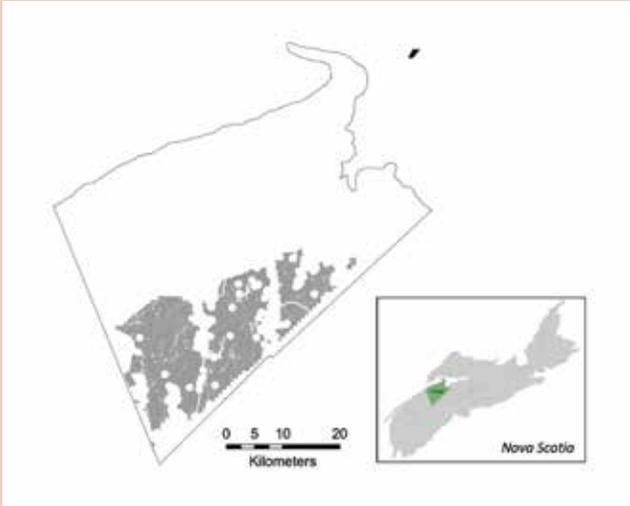


Figure 1: Potential wind energy zones in Kings County, Nova Scotia based on our workflow. For illustration and research purposes only.

NEXT STEPS

The Toolkit is in its early stages. Version 1.0 is expected to be released in August 2019 with the support of funding from Ontario's Independent Electricity System Operator, MITACS, and the Toronto and Region Conservation Authority through the Ontario Climate Consortium.

The workflow and results are being refined through a partnership with the Regional Municipalities of Peel and York, the Town of Caledon, and the City of Markham. We are aiming to ensure the data, techniques, and outputs align as closely as possible with existing protocols and procedures in municipal government.

You can read more about this early work at Community Energy Knowledge Action Partnership (CEKAP).²

Thanks to funding from the Federation of Canadian Municipalities and a partnership with Quality Urban Energy Systems of Tomorrow, we will refine the toolkit through further development and application in five other municipalities across Canada, including the Regional Municipality of Waterloo. Stay tuned! ☺

Notes:

¹ Walker, C and Baxter, J. 2017. Procedural justice in Canadian wind energy development: A comparison of community-based and technocratic siting processes. *Energy Research and Social Science* 29: 160-169 <https://www.sciencedirect.com/science/article/pii/S221462961730124X>. See also <https://theconversation.com/lets-create-climate-policy-that-will-survive-elections-104886>

² Calvert, K. Community Energy Knowledge Action Partnership. Building Tools to Plan for the Transition to Distributed Renewable Energy. <https://www.cekap.ca/blog/building-tools-to-plan-for-the-transition-to-distributed-renewable-energy/>



Kirby Calvert, PhD, is an Assistant Professor and Undergraduate Coordinator in the Department of Geography at the University of Guelph.

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Left to right: Vancouver, Barcelona, Copenhagen

Vignettes: International best practices

BY RAY TOMALTY

Attention to the role of cities in causing and resolving climate change is growing worldwide. Organizations like the C40 Cities Climate Leadership Group have been pushing for strong global agreements and bold action on climate change at the city level. Meanwhile, the Carbon Neutral Cities Alliance of global cities is asking its members to cut city emissions by 80-100 per cent by 2050 or sooner. The gathering urgency of the issue is underlined by the global movement of more than 400 municipalities to pass council resolutions declaring climate change to be a global and local emergency.

In Canada, over half the nation's emissions flow from energy consumed in our buildings and vehicles. Governments are responding to the climate crisis by tightening vehicle emissions standards, multiplying incentives for energy-efficient building retrofits, and

encouraging a shift to renewables in the electricity sector.

Important as these measures are, they fail to address a key factor in urban metabolism: the urban fabric itself. Whether it goes by the name of smart growth, new urbanism,

“In Canada, over half the nation’s emissions flow from energy consumed in our buildings and vehicles.”

transit-oriented development, walkable cities, or green urbanism, there is no doubt that sustainable land use planning has to be part of the solution to climate change. “Re-forming” our cities is the most effective way to channel travel and housing choices into less climate-destructive directions.

BARCELONA'S SUPERBLOCKS

While regions like Vancouver and the Greater Golden Horseshoe are no slouches when it comes to smart growth, there are many inspiring initiatives from overseas with impact potentials beyond what we've seen in Canada. Barcelona intends to contribute to its climate change mitigation goals through a new way of organizing urban space. The city's bus system is being reoriented to run in a highly efficient grid pattern along main avenues between which car access is limited. The “superblocks” between the orthogonal bus routes are closed to most types of car traffic, while pedestrian and cycling access is improved.

The superblocks are being overlaid on the existing street grid, with each superblock consisting of as many as nine internal blocks. Within each traffic-calmed superblock, streets and intersections are being converted

to community spaces, such as plazas, playgrounds, and gardens. The project does not involve major physical changes; rather,

“Today, about 60 per cent of homes and jobs in Copenhagen’s metropolitan region are within easy walking distance of a metro or railway station.”

it’s a type of tactical urbanism that uses soft measures that are often low cost and easy to adapt. The approach lends itself to grassroots experimentation with the newly liberated spaces.

Barcelona is currently working on six superblocks, and more neighbourhoods are being considered for the program. Planners anticipate the initiative – along with 233 kilometres of new bike lanes – will enable a 21 per cent reduction in private car and moped use in the city.

COPENHAGEN’S FINGER PLAN

Copenhagen is, of course, known for its Finger Plan, which has been the governing development model for the region since it was first drawn up in 1947. The concept is based on an urban structure, whereby urban development is concentrated in five “fingers,” running along commuter rail lines and subways. Development is channelled by planning regulations into higher-density, mixed-use areas around stations.

Meanwhile, the central area of Copenhagen serves as the “palm,” where transit lines converge in a compact city centre. The fingers are separated by “green wedges,” which are off limits to urban development. The term “transit-oriented development” was coined in the new world, but the finger plan shows that the practice itself has more than a 70-year history in the old world. Today, about 60 per cent of homes and jobs in Copenhagen’s metropolitan region are within easy walking distance of a metro or railway station.

The hand metaphor always seemed apropos because there were five historic “fingers.” In recent years, however, a sixth corridor is emerging. The Ørestad finger is being created by a public development

corporation, connecting the historic downtown to the international airport to the south. Now about half built out, the high-density, mixed-use corridor straddles an elevated LRT and two surface bicycle routes, one coursing through a high-quality built environment and the other through picturesque scenery. The roadway spine has only one lane in each direction and vehicle use by commuters is discouraged through limited surface parking and high parking fees. Several corporate headquarters have relocated along the corridor; they are finding that a majority of their employees use transit or cycle to work.

SEATTLE’S GREEN FACTOR

On the flip side of smart growth is green growth: the idea that our urban networks should be intercalated with a network of green and open spaces that will not only help moderate the impact of major storms on city infrastructure and buildings, but also work as sponges to soak up city GHG emissions and other air contaminants. Here our cousins to the south are ahead of us with programs such as Seattle’s Green Factor, modelled after programs in Berlin and Malmö.

“...development projects in Seattle must achieve a minimum Green Factor score by adding up points from a menu of options”

To qualify for planning approval, development projects in Seattle must achieve a minimum Green Factor score by adding up points from a menu of options, including rain gardens, native landscaping, vegetated walls, green roofs, and food gardens. The points are weighted by green infrastructure size, functionality, and aesthetics. The system encourages the layered use of various green infrastructure techniques to increase the absorption capacity of the site while producing visually pleasing urban landscapes.

ENVIRONMENTAL IMPACT BONDS

Market-based instruments are attracting more attention in many sectors as tools to support policy goals, often working

alongside regulatory approaches. In the US, several cities have started using innovative financing mechanisms to raise capital for investment in green infrastructure.

The Washington DC Water and Sewer Authority issued an Environmental Impact Bond (EIB) as part of a long-term project to control sewer overflow in three river basins. The bonds were issued to pay for the installation of green infrastructure that would mimic natural processes to absorb and slow surges of stormwater during periods of heavy rainfall, thereby avoiding the need for the authority to upgrade a treatment plant.

EIBs work by raising funds from environmentally motivated investors to pay for public infrastructure that saves a local government money. The government pays back the investors at a fixed rate, but premiums are offered if the infrastructure works as expected and the savings materialize.

In Washington, an investment group and a foundation bought the EIBs for US\$25 million. If a performance evaluation shows that stormwater runoff is reduced to the extent expected, the investors get paid a premium. But if performance is below a certain threshold, the investors lose some of their capital. This approach allows local authorities to tap private investment funds and transfer risk to the private sector, which comes in handy when applied to experimental approaches to environment management.

These vignettes show how the public and private sectors can work together in cities to make them more climate responsible. The underlying principle of all of them is integrated planning, whether that be through a tight linkage of land use and transportation systems, or by incorporating ecological processes into the functioning of engineered networks. This is the lesson that city leaders and designers are gradually internalizing: we’ve gone as far as we can with siloed thinking and disconnected single-purpose interventions. The way forward is through collaborative solutions that focus on synergistic opportunities to reduce emissions and adapt to the inevitable changes to come. ♻️



Ray Tomalty is Principal of Smart Cities Research Services and Adjunct Professor at McGill University.



Eha Naylor, RPP, has been leading Dillon Consulting Limited’s national landscape architecture and environmental design practice for the past 10 of her 40-year career. She has earned numerous awards recognizing her expertise in environmental planning and site design for both public and private sectors and is especially noted for resolving complex, multidisciplinary planning and design assignments.

Registered Professional Planner

PROFILE

NAME:

Eha Naylor, RPP

LOCATION:

Oakville

POSITION:

Partner, Dillon Consulting Limited

Naylor is a Fellow of the Canadian Society of Landscape Architects and a full member of several professional associations, including the Ontario Professional Planners Institute, and has been on the University of Toronto Faculty Council for the Faculty of Architecture, Landscape and Design since 2004. Naylor served on the National Capital Commission’s Advisory Committee for Planning, Design and Realty for 11 years.

What led to your career in planning and, specifically, to environmental planning?

I’m educated as a landscape architect, and I have a degree in business administration, so this wasn’t a natural evolution for me. It came about because the work I was interested in and wanted to focus on involved larger system-based planning. Whether that was through a landscape architecture lens or an environmental planning lens or a policy planning lens, my interest and focus was the natural environment and using natural systems to define the frameworks for development or making land-use planning decisions.

Do any projects stand out as a turning point in your career?

While there are many projects that I’m really proud of, the turning point was early in the 1990s, when I was part of an interdisciplinary team that worked for a municipality. Part of their jurisdiction was in the Niagara Escarpment Plan.

We were challenged with identifying how to address the policy requirements of the municipality and of the Niagara Escarpment Commission (NEC) along with the aspirations of land owners who wanted to develop. To reconcile all of this and find a physical design solution, it took the ability not only to look at the physical assets of the land, but also to look through the policy lenses of the municipality and the NEC.

I won’t say it was an easy process – it wasn’t – and it ended up in front of a board. But the turning point for me in terms of

“Climate change is a disruptor. It’s causing a paradigm shift – a change in the way people think – and it’s changing what our clients worry about.”

planning was that I recognized that you do need to have an understanding of policy and how to interpret that policy, as well as being able to take those policies and apply them into a relatively sensitive landscape to come up with solution that was attainable and that all parties could agree with. For me, it meant moving from only being part of a design discipline to becoming much more immersed in the policy side and figuring out how to work there. I recognized this was something I needed

to understand better, and I became a Registered Professional Planner after that.

How does climate change figure into your projects at Dillon?

We integrate a climate change lens into every project. That's a Dillon strategy. For example, we've been working on a climate change action plan for the City of Mississauga, particularly looking at some of their parks facilities.

The effects of climate change vary much depending on the location. The most challenging locations are in intensifying urban areas where we expect our natural features, like ravines, lakes, and sensitive natural areas, to act as the buffer for climate change impacts. We're putting more people, buildings, and infrastructure into locations where there aren't many features that would help mitigate the effects of climate change.

I also think many of our heritage resources are vulnerable because it's really hard to adapt them. We see more riverine flooding. In Ottawa and the Maritimes, for example, they are experiencing terrible flooding again this year and all of the riverside infrastructure that was repaired after the floods in 2017 is being impacted.

These places are at the greatest risk, and yet we continue to expect our natural physical assets to absorb more and more of the climate-related impacts.

When did Dillon shift to integrating a climate change strategy?

Maybe three years ago. Climate change is a disruptor. It's causing a paradigm shift—a change in the way people think—and it's changing what our clients worry about.

In working with the City of Mississauga on their waterfront strategy, at the top of the list is ensuring what we build is resilient to flooding and ice storms and that our natural features aren't degrading further. There is a whole list of things we should be thinking about and preparing for.

Does thinking about the environment and climate change come quite naturally to planners?

The environment is one of the knowledge areas planners absolutely need to have. But I characterize climate change as a sticky complicated problem, and these kinds of complex problems need an interdisciplinary approach to solutions. Planners need to recognize that to find a solution, they need specialists who may not be planners: climate specialists, risk management analysts, air quality people, natural heritage specialists, landscape architects, and every branch of engineering. I'm sure I missed some. The planning community needs to be able to reach out and bring together the disciplines to provide input to the solution. And there needs to be leadership in the planning community to make sure the right people are at the table.

What would you like to see change in terms of federal and provincial policy?

I think the public is on board and recognizes that climate change is here. How are you going to tell people whose home has been blasted by a tornado at the end of February that something isn't happening? People are feeling it on the ground.

But I really think federal and provincial levels of government need to work together to develop policies everybody

can embrace and work towards, because they're responsible for protecting the public and ensuring the broad community is safe. And it takes collective action. Maybe there needs to be a joint committee or intergovernmental group that addresses climate change and figures out how to spend money the right way to tackle the most serious problems. Because the problem isn't jurisdictional. When climate change effects arrive, it might be geographic or it might be something else, but is it federal location or a provincial location? It's always both.

However, it's very hard to encourage collective action politically. We have to change how we think as a society. That takes conceptual thinking, where you go beyond your own self, and that's hard to do. If we had been able to do it earlier, we might not be here now—but here we are.

What worries you the most about climate change?

Like everyone else who thinks about this and works in the field, I worry that we're not going to be impactful enough quickly enough. That the slippery slope we're on is just going to continue—that we'll become untenable.

For a politician, perpetuity is four years—that's their whole term. We have to stop thinking like that. So I'm inspired to keep doing things I think are collectively really positive, because I worry for future generations. ☹️

This interview has been condensed and edited for length.

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OPPI19: Beyond25

Join OPPI at Toronto's Beanfield Centre from October 1 to 3 for our annual conference and a celebration of the 25th anniversary of the Registered Professional Planner designation in Ontario. This year, we'll focus on issues that require attention now and in the future: uneven growth, climate change, and technology. OPPI19 Beyond 25 is about facing change and guiding Ontario into the next quarter century.

Our keynote speakers are Gregg Lintern, RPP, MCIP, chief planner for the City of Toronto; Ramona Pringle, writer, producer, and digital journalist; and Mikael Colville-Andersen, one of the leading global voices in urbanism.

Learn more about the conference at ontarioplanners.ca. Early-bird registration is open until August 12.

OPPI STAFF ANNIVERSARIES



Robert Fraser

OPPI DIRECTOR,
FINANCE AND ADMINISTRATION

25

Over his 25-year tenure with OPPI, Robert Fraser has heard just about every question imaginable.

"When I joined OPPI in 1994, I knew almost nothing about planners, other than there were about 2,500 at the time," says Fraser, who had previously worked as the administrative coordinator for the Ontario Dietetic Association.

Within OPPI, Fraser transitioned from administrative coordinator to director of finance and administration and was an integral part of OPPI's growth and the maturation of the profession. Among his responsibilities, Fraser manages financial planning, enterprise development, human resources, and information technology.

"I am particularly proud of being part of a professional team of staff, volunteers, and members," he says. "Today, I celebrate not only my 25th anniversary as OPPI's longest-serving employee but, more importantly, I celebrate, along with all members, 25 years of RPP?"



Mary Ann Rangam

OPPI EXECUTIVE DIRECTOR

20

When Mary Ann Rangam looks back over the past 20 years, she recognizes the launch of OPPI's Millennial Strategy Plan as a turning point that paved the way for the future.

"The Millennial Plan established the road map for the strategic directions set out in our 2020 Strategic Plan, INSPIRE OPPI," says Rangam. "OPPI has positioned itself and the profession for a bright future in its work of safeguarding professionalism, branding RPP to decision makers and key stakeholders,

exchanging knowledge and expertise for the betterment of planning in Ontario, and empowering member ownership and community experience."

Other high points include: adopting a policy governance model and restructuring OPPI's council; breaking the 1,000-attendee mark at the 2015 Conference; growing membership by 64 per cent since 2000; establishing the Professional Standards Committee and Professional Standards Board; issuing more than 150 planning policy documents; and ongoing efforts to strengthen professionalism through Bill 70, the *Registered Professional Planners Act, 2019*.

"OPPI members can take pride in knowing that its professional organization has all the markers of a high-performance organization and is well resourced with volunteer leadership, financial stability, and an active grassroots connectivity by way of OPPI's seven districts."

Rangam sees new future opportunities from the Indigenous Planning Perspectives Task Force, continued launch of *Y Magazine*, and implementation of OPPI's newly refreshed Learning Strategy and Public Affairs Framework Strategy.

"With thanks and gratitude, all of this and much more was accomplished through the perseverance and commitment of volunteers and dedicated staff."



Brian Brophrey

REGISTRAR AND DIRECTOR,
MEMBER RELATIONS

10

Brian Brophrey is trend watcher – of sorts. As OPPI's registrar and director of member relations, he watches for trends in the issues planners face, so he can bring them to the attention of OPPI council and staff to inform big-picture decision making.

"I hear about interesting situations and

challenges OPPI members are facing around Ontario, and I discuss with them the Code of Practice and other ethical considerations and try to help them find resolutions," says Brophrey, who is also a lawyer.

Brophrey says a key challenge for today's planners is working with a wide range of other professionals and elected officials to balance different interests and preferences, all in a time of increasing complexity, transparency, and engagement by the public.

Currently, Brophrey is working with some terrific volunteers on the first five-year review of national competencies and standards, a directive that flowed from the Planning for the Future initiative. The result will be an updated and standardized process for RPP certification and the accreditation of university planning programs.

"Going forward, the profession has a process for continually doing the important work of reviewing, considering, and updating its critical foundations."



Ryan Des Roches

EDUCATION MANAGER

5

Ryan Des Roches believes planners are lifelong learners, and a key value of membership is the

opportunity to keep up to date with the profession. A current focus relates to OPPI's role in responding to the Truth and Reconciliation Commission's calls to action.

"Non-Indigenous Canadians have a responsibility to familiarize themselves with this history from pre-contact to present day, as well as learn about the diverse cultures and traditions of First Nations, Inuit, and Métis people," he says. "Acknowledging the hard truths that accompany this history, which have always been there but are constantly pushed to the periphery, represents an important step

forward in creating positive social change.”

He believes that with a strong understanding of Indigenous history and culture, professional planners will be more capable of using emotional intelligence to build stronger relationships and trust with the people they serve.

Close ties to academia also give Des Roches a peek into the future.

“Gen-Z planners have grown up with technology always being available, and so seeing how they will continue to leverage technology and the new ways in which they do so in their professional practice will be fascinating to watch.”

We are fast coming up on Des Roches’ favourite time of year: the OPPI conference.

“It’s heartening to work for an organization with such passionate members and to be provided with the opportunity to learn from them.”



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HONOURING
25 years
OF RPP

As part of our ongoing celebration of the 25th anniversary, each issue of Y Magazine will include an article that explores the significance of the milestone from different perspectives.

EMBRACING CHANGE AND CHALLENGE

MAUREEN ZUNTI, RPP, chose the Faculty of Environmental Design at the University of Calgary mostly out of general interest. She had worked for a number of years and was raising a family; planning appealed to her as a mid-life career change. After moving to London and completing her degree, she started working as a planner in 1997.

When Zunti and Sifton Properties first became involved with West 5 over 12 years ago, the site had already been approved for a big-box retail and multi-family development. Under Sifton, the project evolved into a mixed-use, pedestrian-oriented, sustainable community. The key principles defining the West 5 vision are smart, connected, active, and healthy. The most innovative aspect is its focus on being a net-zero community primarily powered by the sun.

Why is West 5 important to you?

It has been incredibly gratifying to have been involved in shifting the direction of this project, from the outset to seeing it actually being developed. Being able to work for a developer willing to take on the risks of innovation in order to create a more sustainable future for its tenants, residents, and surrounding community is a privilege.

As an RPP, what are you most proud of?

I'm proud of the range of projects I have been able to participate in, as they have spanned both private and public sector projects and have included everything from small, single building sites to master



plans for large greenfield areas, as well as heritage planning. The relationships I have established with other planners, technical consultants, and members of the public are also something I value greatly.

The projects that have provided the greatest personal and professional satisfaction are those which have led to positive changes in an existing community, and also where I've contributed to improved environmental, active mobility, and urban design outcomes. Seeing a project through from the initial land acquisition to watching residents enjoy a new community is definitely a source of pride.

My involvement in OPPI at various levels has also given me great satisfaction.

What are some of the common elements in your projects?

Every project demands the ability to look at it from multiple perspectives and balance the often conflicting social, environmental, and economic aspects. I've learned that the size of a project has no bearing on the

complexity: some of the smallest sites can have the greatest challenges and take far longer than a much larger development.

Public engagement has been a constant throughout my career, and the fear of change felt by members of the public never seems to go away, no matter how positive a project is or how much engagement occurs. But getting people involved early is generally better, and helping people understand the "why" of things makes a big difference.

Your advice for young planners?

Embrace change and challenge. Ask questions and seek out other planners and professionals you can learn from. Remember that not everyone shares your values: planners need to create places and spaces for all people. Travel to other cities, provinces, and countries: expanding your horizons is critical. Never stop looking and learning. And get involved in OPPI for the learning, leadership, and networking opportunities it offers! 

PREVIEW



NEXT ISSUE PREVIEW: TECHNOLOGY AND PLANNING

In October 2017, Waterfront Toronto and Sidewalk Labs jointly announced the launch of Sidewalk Toronto, a new kind of development that combines forward-thinking urban design and new digital technology. The project aims to achieve precedent-setting levels of sustainability, affordability, mobility, and economic opportunity.

But what do projects like Sidewalk Toronto mean to the planning profession and to the community? What makes it a new kind of development? And how is the integration of technology changing the practice of planning?

In the next issue of *Y Magazine*, we'll bring you perspectives from across the province on the infinite possibilities that technological changes and advances bring to the planning profession.

Sidewalk Toronto will begin with a new neighbourhood, called Quayside, located at Parliament Slip, just southeast of Downtown Toronto. Sidewalk Labs and Waterfront Toronto aim to bring the innovations advanced at Quayside to scale across the Eastern Waterfront (Portlands), more than 325 hectares that represent one of North America's largest areas of underdeveloped urban land. sidewalktoronto.ca



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