

Public Health and Land Use Planning: Highlights



April 2011



Title Page

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Background Report: All of the information captured in this report is drawn from, and referenced in, the background report, "**Public Health and Land Use Planning: How Ten Public Health Units are Working to Create Healthy & Sustainable Communities**" (2011) which can be downloaded from:

http://www.cleanairpartnership.org/public_health_and_the_built_environment

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I Introduction

The Clean Air Partnership (**CAP**), in partnership with the Ontario Public Health Association (**OPHA**), examined ten public health units in Ontario that are trying to create healthier and more sustainable communities by working through the land use planning processes in their districts/regions. This research was funded by the Ministry of Health Promotion and Sport (**MHPS**) Healthy Communities Fund. The findings are captured in a 238-page background report, "**Public Health and Land Use Planning: How Ten Public Health Units are Working to Create Healthy and Sustainable Communities**" (April 2011) which can be downloaded at: http://www.cleanairpartnership.org/public_health_and_the_built_environment

This report provides the highlights from that background report. All of the information contained in this report is drawn from, and referenced in, that background report. This report, and the background report, have been produced as tools for public health professionals who are interested in improving health as it is affected by the built environment. We hope that both reports will stimulate discussion, encourage innovation, and invite others to share their ideas and success stories.

This summary report has also been prepared for professionals in fields such as land use planning, transportation planning, environmental coordination and sustainability planning. We hope that it helps them to appreciate both public health's interest in land use and transportation planning issues, and the many ways in which public health professionals can support them on these issues.

Report Structure

This summary report is divided into three sections. The first section, **Introduction**, provides a brief overview on the public health sector and the Ontario Public Health Standards.

The second section, **Public Health Interest in the Built Environment**, provides an overview on the health and social science evidence which links human health to the built environment as mediated through six factors - physical activity, healthy eating, injury prevention, air quality, climate change and water quality. It includes a brief discussion of the health inequities that are experienced by low income populations as they relate to the built environment.

The third section, **Discussion - Findings - Ten Public Health Units**, includes a discussion of the findings from all ten public health units. It discusses the interventions being sought by public health units through land use planning processes, the strategies they are employing, the expertise they are directing at these activities, and the structures they are using to encourage inter-disciplinary collaboration. Details on the work of individual public health units can be found in the background report.

Public Health Units

A public health unit is an official health agency that provides community health programs under the Provincial Health Protection and Promotion Act. There are 36 public health units in Ontario. Each one is governed by a Board of Health and administered by a Medical Officer of Health who reports to the local Board of Health. The Board of Health is largely made up of elected representatives from local municipal councils. Approximately two-thirds of Ontario's Boards of Health are autonomous bodies created to provide public health services. Municipal Councils are the Boards of Health for the remaining third. Both forms have the same function within their communities. The Ministry of Health and Long-Term Care (**MOHLTC**) shares the costs of running public health units with local municipalities.

Among the ten public health units examined, one is located in northern Ontario, one in eastern Ontario, three in western Ontario, and five in central Ontario. Four of the public health units report to autonomous Boards of Health, five are situated in regional municipalities, and one is situated in a single-tier municipality. Four of the public health units are located in the Greater Toronto Area (**GTA**) with well established urban centres, two are in regions characterized by an urban/rural mix of development, three are in rural areas, and one is in the north.

Ontario Public Health Standards

The Ontario Public Health Standards are guidelines for the programs and services that are mandated for public health units by the MOHLTC. They outline the expectations for Boards of Health, which are responsible for providing "public health programs and services that contribute to the physical, mental, emotional health and well-being of all Ontarians".

The Ontario Public Health Standards, which were updated in 2008, are based upon a recognition that the health of individuals and communities is "significantly influenced by complex interactions between social and economic factors, the physical environment, and individual behaviours and conditions.....known as the determinants of health". They state that: "Addressing determinants of health and reducing health inequities are fundamental to the work of public health in Ontario".

The Ontario Public Health Standards includes five Program Standards and one Foundational Standard. The Foundational Standard includes the assessment of population health,



surveillance research, knowledge exchange, and program evaluation. The five Program Standards include:

- Infectious Diseases;
- Environmental Health;
- Emergency Preparedness;
- Chronic Disease and Injuries; and
- Family Health.

Each Program Standard establishes requirements for public health programs and services under four functional headings; assessment and surveillance, health promotion and policy development, disease and injury prevention, and health protection. The Foundational Standard and the first three Program Standards are administered by the MOHLTC, while the last two Program Standards are administered by the MHPS.

Public Health Authority & the Built Environment

Public health interest in the built environment is coming largely from professionals working under two Programs Standards; the Chronic Disease and Injury Prevention Program which is administered by the MHPS and the Environmental Health Program which is administered by the MOHLTC. The Ontario Public Health Standards explicitly instruct and authorize public health professionals who work in these two programs to support the development of healthy public policies in the field of the built environment:

1. The Chronic Disease Prevention subsection of the Chronic Disease and Injuries Program Standard states that: "The board of health shall work with municipalities to support healthy public policies and the creation or enhancement of supportive environments in recreational settings and the built environment regarding the following topics: healthy eating; healthy weights; comprehensive tobacco control; physical activity; alcohol use; and exposure to ultraviolet radiation".
2. The Health Hazard Prevention and Management subsection of the Environment Health Program Standard states that: "The board of health shall assist community partners to develop healthy policies related to reducing exposure to health hazards. Topics may include, but are not limited to: indoor air quality; outdoor air quality; extreme weather; and built environments".

II Public Health Interest in the Built Environment

Over the last ten years, there has been a growing interest in land use planning processes among public health professionals in response to a robust body of health and social science studies that have demonstrated the substantial impact that the built environment can have on human health and wellbeing. A broad array of health conditions, mediated through a variety

of risk factors, have been linked to the built environment: chronic diseases and deaths that are associated with physical inactivity, obesity and unhealthy eating patterns; injuries, hospital admissions, and deaths associated with falls, motor vehicle collisions, and alcohol consumption; acute and chronic respiratory and cardiovascular conditions associated with poor air quality; infections and illness resulting from contaminated water; and injuries, deaths, and diseases that are directly or indirectly related to climate change.

Overlaying all of these interests is a growing understanding that some groups within the overall population are particularly vulnerable to health impacts because of their socio-economic status. There is strong evidence that income, in particular, can have a significant impact on human health because of its influence on the many factors that affect health including living conditions, levels of stress, working conditions, health-related behaviour, the quality and quantity of food, the quality of housing, and the safety of neighbourhoods.

Consequently, interest in the built environment is coming from many directions within the public health sector: from those who work to promote physical activity, healthy eating, and injury prevention; from those who work to improve air quality, address climate change, and protect water resources; and from those who seek to address the health inequities in our society.

Physical Activity, Health & the Built Environment

It has been clearly demonstrated that physical activity has a significant impact on human health. Those who are physically active live longer, and have a lower risk for heart disease, strokes, colon cancer, and Type 2 diabetes. They gain less weight, have reduced body fat, and experience relief from symptoms of depression and anxiety.

Despite the significant health benefits associated with physical activity, most Canadian adults and youth do not get the exercise recommended by the Canadian Guidelines for Physical Activity. A study recently published by Statistics Canada staff found that:

- 85 per cent of Canadian adults do not get the 150 minutes of moderate to vigorous physical activity per week recommended by the Canadian Guidelines for Physical Activity;
- 91 per cent of boys (6 to 19 years in age) and 96% of girls do not get the 60 minutes of moderate to vigorous physical activity per day recommended by the Canadian Guidelines for Physical Activity.



A growing body of health and planning literature has demonstrated that the built environment affects the levels of physical activity in the general population. Many studies have demonstrated that population and/or employment density, the diversity of land uses, and the connectivity of roads, bike paths, and sidewalks are the elements of the built environment that are most strongly linked to the levels of physical activity.

Surveys indicate that Canadians would be willing to leave their cars at home; to walk and cycle more if there were safe and convenient facilities to use.

A number of studies have also demonstrated that proximity to recreational facilities such as parks, pools and gyms, and active transportation facilities such as trails and bike paths, influences the levels of physical activity among residents.

People who live on low incomes are affected more by the design of their communities because they may not be able to afford a car, or may not be able to afford healthy food because of the costs associated with owning a car. People who live on low incomes are more dependent on local services and transit than others in the general population.

The elderly are also particularly sensitive to the "walkability" of their neighbourhoods. They can be more isolated because they are unable to drive and they may have a greater need for accessible amenities and services that are nearby and easily walkable. Walking is a prominent form of physical activity for older adults, but the risk of falling is a major concern for these adults because falls can be life threatening. So the design and condition of roads and sidewalks is a critical factor to the mobility and independence of the elderly. Children and youth are also greatly affected by the design of their communities, particularly in rural areas where transit may be limited.

Healthy Foods, Health & the Built Environment

In 2005, Ontario's Chief Medical Officer of Health, Dr. Sheela Basrur, identified weight gain and obesity as "an epidemic" that is threatening Ontarians health. Her report noted that in 2003, almost one half of all adults in Ontario were overweight or obese. It reported that between 1981 and 1996, the number of obese children (7 to 13 years in age) in Ontario tripled. She concluded that obesity was contributing to the dramatic rise in illnesses such as Type 2 diabetes, heart disease, stroke, hypertension and some cancers in Ontario. While weight gain and obesity are strongly linked to levels of physical inactivity, they are also linked to poor nutrition and the consumption of low-nutrient "fast-foods" and/or processed foods.

People who live on low incomes can have a more difficult time eating a healthy diet that is high in fresh fruits and vegetables, than others in the general population because they may not be able to afford healthy foods. Studies have shown that people who have difficulty affording healthy foods are more likely to develop diabetes, high blood pressure, and food allergies than

households with sufficient food because they consume fewer servings of fruits and vegetables, milk products, and vitamins than those in food-secure households.

A few studies have also demonstrated that people are more likely to meet dietary guidelines when they have ready access to grocery stores with healthy and affordable foods, than those who only have easy access to convenience stores that offer mostly packaged and processed foods. Ease of access to healthy foods has a greater impact on low income households that have less mobility and fewer transportation options.

A number of public health units in Ontario have taken the position that, to ensure their communities have access to healthy foods well into the future, it is important to establish land use planning policies and programs that: promote the preservation of local agricultural land; support local farmers; and encourage urban agriculture.



These public health units point to the urbanization of prime agricultural land in Ontario and future uncertainties related to peak oil and climate change. They note that declining petroleum supplies could make it more expensive to import fresh fruits and vegetables in the future. In addition, they note that climate change is expected to negatively affect regions of North America from which we currently import much of our fresh fruits and vegetables. They note that food that is locally grown is higher in nutritional value because it is picked closer to home and shipped shorter distances. In addition, they note that it is easier to ensure the safety of locally grown foods that fall under Canadian regulations.

Injuries, Health & the Built Environment

In 2003, 13,906 Canadians died and 226,436 Canadians were admitted to hospitals as a result of injuries. Falls are the most common cause of injury-related hospital admissions in Canada, accounting for two out of every three injury-related hospital admissions, while motor vehicle injuries are the second most common cause of injury-related hospital admissions accounting for 10% of all injury-related hospital admissions.

While far more drivers and passengers are injured or killed in motor vehicle collisions than pedestrian and cyclists, pedestrians and cyclists face higher risks of fatality or injury per distance travelled than people who travel by automobile, bus or rail. The fatality risk per distance travelled for pedestrians and cyclists in the United States are 23 and 12 times higher, respectively, than for those who travel by cars. Evidence suggests however, that injury and

fatality rates among pedestrians and cyclists decrease as active transportation (i.e. walking and cycling) increases.

Various environmental factors influence the rate of collisions, injuries and fatalities on roads. Studies have found that high density and walkable communities that are well served by public transit tend to have lower death rates from motor vehicle collisions. This phenomenon has been attributed to: reduced vehicle kilometres travelled by individuals living in high density communities that have efficient transit systems; lower average traffic speeds in higher density areas; and reduced driving by high risk motorists such as teenagers and impaired drivers who can use transit.



A number of studies have shown that traffic speeds and volume are strongly linked to the number and severity of collisions. Generally traffic volumes are associated with the frequency of collisions while traffic speed is associated with the severity of collisions. Street design and facilities have been shown to affect the safety of pedestrians and cyclists in a number of studies as well. For example, cycling facilities such as bike lanes and off-road bike paths reduce collisions and injuries involving cyclists. Sidewalks, traffic circles and four-way stops have been linked to lower pedestrian-vehicle collision rates as well. In addition, street trees, landscaping, and on-street parking have been shown to lower the speed of vehicles driving on streets.

While everyone in the community can experience an injury, there is strong evidence that Canadians who live on low incomes are more likely to be hospitalized for an injury than those who live on high incomes. The Canadian Institute for Health Information found that Canadians in the least affluent neighbourhoods were 30 per cent more likely to have an injury leading to hospitalization than people living in the most affluent neighbourhoods.

Air Quality, Health & the Built Environment

Hundreds of studies conducted in communities around the world have clearly demonstrated that short-term increases in the levels of the common air pollutants are associated with increases in a broad range of acute health effects. A number of studies directed at long-term exposures indicate that air pollution contributes to the development of chronic heart and lung diseases among adults as well.

After conducting a comprehensive review of the health studies directed at fine particulate matter (PM_{2.5}), the common air pollutant most strongly linked to chronic health effects, the

American Heart Association concluded that:

- There is a causal relationship between exposure to PM_{2.5} and cardiovascular disease and death;
- Longer-term exposure (i.e. a few years) to elevated levels of PM_{2.5} increases the risk for cardiovascular mortality and reduces life expectancy; and
- Reductions in air levels of PM_{2.5} can decrease cardiovascular mortality within a few years .

The Children’s Health Study, a long-term study directed at about 6,000 children living in 12 communities in Southern California since 1993, also suggests that air pollution decreases lung function among adolescents, and increases the risk of asthma among children, who grow up in communities with high levels of air pollution.

Using the strongest air pollution health studies, air monitoring results, and health statistics, the Canadian Medical Association estimated that the common air pollutants were responsible for approximately 21,000 premature deaths in Canada in 2008. It attributed about 2,700 of those deaths to short-term elevations in air pollution and about 18,300 to long-term exposures. It estimated that 42 per cent of these deaths were related to cardiovascular disease and 11 per cent were related to respiratory conditions.



While everyone can be affected by air pollution, the health risks are greater for the elderly, young children, people with pre-existing health conditions such as heart and lung diseases and diabetes, and possibly for women and individuals who are obese. A new Canadian study also indicates that low income populations have a greater chance of living in close proximity to local sources of air pollution than their higher income counterparts.

Many studies have demonstrated that the built environment can have a significant impact on local air quality by influencing the extent to which people depend upon automobiles and other modes of transportation. For example, a study conducted in Atlanta found that people who live in the most auto-oriented neighbourhoods drove an average of 30 percent more than those who lived in the most walkable neighbourhoods.

Several studies have also demonstrated the substantial benefits that alternate modes of transportation can have on local air quality and/or human health. For example, in the City of Atlanta, researchers found that an alternative transportation strategy introduced during the 1996 summer Olympics, which shifted people from their vehicles into public transit, reduced

automobile traffic counts by 22.5 per cent, peak ozone levels by almost 28 per cent, and asthma-related hospital admissions among children by 11 to 44 per cent.

Air quality can also vary substantially across a community in response to local emission sources such as highways, industrial facilities, and truck depots. The principal source of variation in air quality within many communities is motor vehicle-related air pollution associated with high volume traffic corridors. Health studies directed at high volume traffic corridors have demonstrated that these variations in air quality can have a significant impact on human health. The Health Effects Institute Panel has concluded that the evidence demonstrates that traffic-related air pollution aggravates asthma, and suggests that traffic-related air pollution causes the onset of childhood asthma, non-asthma respiratory symptoms, impaired lung function, and increases the total deaths, cardiovascular deaths, and cardiovascular disease in a community. These health concerns can be addressed with development patterns that separate sensitive land uses such as homes, schools and hospitals from emission sources such as high volume traffic corridors.

Climate Change, Health & the Built Environment

Climate change is one of the most significant public health challenges of our generation. In 2006, Sir Nicholas Stern, former World Bank economist, led a study for the British Government which concluded that climate change impacts could create economic and social disruptions on a scale similar to those experienced during the great wars or the depression.

In 2007, the Inter-governmental Panel on Climate Change (**IPCC**) issued a report in which it confirmed, with 90% certainty, that the world's climate is warming and that warming is being caused by human activity. The report found that levels of carbon dioxide (**CO₂**) in the atmosphere have increased from 280 parts per million (**ppm**) in 1750 to 379 ppm in 2005; an astounding increase when one considers that CO₂ levels have ranged between 180 and 300 ppm for the past 650,000 years. Climate models demonstrate that atmospheric levels of CO₂ must be stabilized at 450 ppm if global temperature increases are to be limited at two degrees Celsius.

Climate change impacts could create economic and social disruptions on a similar scale to those experienced during the great wars or the depression.

The IPCC has also concluded that, even if immediate and aggressive action were taken to freeze emissions at 2000 levels, a two degree Celsius increase in global temperatures is "locked in" for the next two decades because of "carbon feedback cycles". The Stern study found that global greenhouse gas (**GHG**) emissions must be reduced by approximately 60 per cent by 2050 if atmospheric levels of CO₂ are to be stabilized at 450 to 550 ppm. These findings suggest that action must be taken both, to adapt to climate change that is inevitable, and to reduce emissions of GHGs to stabilize the climate.

Global climate change is expected to have profound impacts on the health of whole populations in regions spanning the globe. The IPCC has concluded that the projected climate change is likely to affect the health status of millions of people, particularly those who live in countries that have little adaptive capacity, through:

- Increases in malnutrition and related disorders;
- Increased deaths, disease and injury due to heat waves, floods, storms, fires and droughts;
- The increased burden of diarrheal disease;
- The increased frequency of cardio-respiratory diseases due to higher concentrations of ground-level ozone related to climate change; and
- The altered spatial distribution of some infectious disease vectors such as mosquitoes and ticks.

In Ontario, climate change is expected to affect human health by:

- Increasing the frequency and severity of heat waves;
- Increasing the frequency and severity of smog episodes;
- Increasing the frequency of extreme weather events that result in flooding and tornados;
- Increasing the risk of tick- and insect-borne diseases such as Lyme disease, West Nile virus, and possibly malaria;
- Increasing the risk of water-borne diseases that can be associated with extraordinary rainfall or flooding.

The Walkerton E. coli outbreak in 2000... was the result of an extraordinary rainfall... combined with improper water disinfectant treatment.

The development patterns and design of our communities has a substantial impact on emissions of GHG emissions that contribute to climate change. Several studies have demonstrated that people who live in more compact, mixed-use communities drive 20 to 40 percent less than those in lower density communities. This translates into a 20 to 40 per cent reduction in emissions of GHGs from the transportation sector in those communities. Energy use in buildings is also another significant source of GHG emissions in Ontario that can be influenced through the land use planning processes.

There are a number of actions that can be taken through local and regional land use planning processes to adapt to climate change that is currently occurring as well. For example, municipalities can:

- Consider the future irrigation needs of farmers when managing ground water;
- Update flood plain mapping in light of climate change projections;
- Encourage recharging of groundwater tables in urban centres;
- Encourage the use of energy efficient standards (beyond the current Ontario Building Code) in institutional, commercial and residential construction; and
- Encourage the development of buildings that conserve water and reflect heat.

Water Quality, Health & the Built Environment

Clean, accessible fresh water is essential to life. Water used for drinking and other purposes is drawn from ground water or surface water. When it rains or snows, water either seeps into the soil where it is filtered before it reaches groundwater or it runs along the surface of the ground and flows into streams, rivers and lakes.

Water can be contaminated with biological organisms such as bacteria, parasites or viruses, or chemical contaminants. Generally speaking, the biological organisms of concern in water originate from animal or human waste, while the chemical contaminants come from point sources such as industrial facilities or non-point sources such as landfills, parking lots, farms and golf courses.



Heavy rainfall and outbreaks of waterborne diseases have been shown to be closely linked. This phenomenon has been attributed to increased levels of contaminants in streams and storm sewers from run-off and/or increased levels of sediment in water which reduce the effectiveness of chlorination processes.

Biological organisms can produce a variety of health conditions ranging from mild gastrointestinal symptoms to meningitis, kidney failure, cholera, pneumonia and dysentery. Water-borne diseases affect about 4 billion people each year globally. In Canada, where water and wastewater are treated and regulated, large scale outbreaks of water-borne disease are relatively rare. Based on water sampling conducted in Ontario, experts in this field believe that small-scale outbreaks occur quite frequently in Ontario. While water-borne diseases can affect anyone, young children, pregnant women, the elderly, and people with pre-existing health conditions tend to be more susceptible to their effects than other members of the community.

Land use planning decisions can impact water quality in several ways. For those communities that rely on wells, the density of development can impact water quality as impervious surfaces reduce the water that is absorbed into the ground, which can reduce the quantity and quality of groundwater. In addition, as impervious surfaces cover the ground, run-off to surface waters can lead to soil erosion and increase the level of contaminants in surface water. The greatest sources of water pollution in suburban areas can be parking lots, wide roads, and lawn care products, with over-use of septic systems contributing to contamination in some cases.

Water resources can be protected by protecting greenspace, decreasing the area covered by impervious surfaces, encouraging green roofs, and encouraging materials and storm water systems that help to reduce and filter run-off.

III Discussion - Findings - Ten Public Health Units

For this project, staff in ten public health units were interviewed to find out how they are trying to influence the land use planning processes in their communities. Staff were asked to identify the risk factors they are working to influence, the interventions they are seeking, the strategies they have employed, the expertise they are directing at these issues and processes, and the organizational structures they have utilized to encourage inter-disciplinary collaboration. The ten public health units that participated in the project were:

- Sudbury & District Health Unit - northern community and autonomous Board of Health;
- Grey Bruce Health Unit - rural area and autonomous Board of Health;
- Haliburton Kawartha Pine Ridge (HKPR) District Health Unit - rural area and autonomous Board of Health;
- Simcoe Muskoka District Health Unit - rural area and autonomous Board of Health;
- Niagara Region Public Health - urban/rural mix and Regional Council as Board of Health;
- Region of Waterloo Public Health - urban/rural mix and Regional Council as Board of Health;
- York Region Public Health Branch - GTA and Regional Council as Board of Health;
- Peel Public Health - GTA and Regional Council as Board of Health;
- Halton Region Health Department - GTA and Regional Council as Board of Health;
- Toronto Public Health - City of Toronto - autonomous Board of Health and City Council.

Interventions Being Sought

Active & Alternative Modes of Transportation

All of the ten public health units examined are promoting densities, land use mixes, and/or urban designs that support active modes of transportation such as cycling and walking, and/or alternative modes of transportation such as public transit.

In larger urban centres, the public health units are promoting live/work relationships and a range of housing that would allow people to work in the communities where they live. They are encouraging employment and population densities that make it possible to provide



efficient and affordable transit services. They are supporting mixed land uses that foster walking and other active modes of transportation. They are encouraging policies that would locate schools, transit stops, parks, open spaces, recreational facilities, retail outlets and services within close proximity to residential neighbourhoods.

In small and large urban centres, these public health units are encouraging community design elements that support active modes of transportation: street designs with a strong sense of place that foster active modes of transportation; pedestrian and cycling infrastructure that is safe and appealing with a high degree of connectivity; and trails, parks and greenspace that are accessible by active modes of transportation and/or public transit.

In rural and isolated areas, efforts are directed towards the provision of trails and paved shoulders that can be used to increase levels of physical activity and/or access to jobs and services among those who cannot drive because of age, ability or income.

In rural areas and smaller urban centres, physical inactivity, vehicle-related injuries and deaths, and accessibility issues are the primary arguments used to support and promote active transportation, trails, and paved shoulders. In larger urban centres, particularly in southern Ontario, the need to improve air quality and slow climate change are used as arguments to support active transportation and public transit, along with those related to physical activity, injuries, and access.

Access to Parks, Trails & Open Space

Many of these public health units are promoting or supporting policies to establish recreational facilities, trails, parks, public squares and greenspace that are equitably distributed across a community to encourage recreational physical activity among all ages and income groups. These facilities can also provide benefits for mental health, local air quality, and/or the urban heat island effect.

Access to Healthy Foods

Several of the public health units examined have developed health promotion programs that support local farmers and increase access to fresh foods among residents with a particular emphasis on people living on low incomes (Waterloo, Halton, Niagara, Sudbury, York, Toronto).

Several public health units have also attempted to fold food access issues into the land use planning processes. For example, several have worked to address mobile farmers' markets, community gardens, green roofs, and equitable access to



retailers that sell fresh fruits and vegetables in the official plans for the regions, counties and/or local municipalities in their districts. A few have identified the provision of community gardens and/or retail space for fresh foods as a condition to be applied when reviewing secondary plans and/or site plans in high density areas that are not well served by grocery stores.

A couple of public health units (Waterloo and Toronto) have conducted research into the food systems within their communities to inform and support land use planning policies and municipal programs that support local farms with a "broader determinants of health" approach to the issue.

Protection from Local Air Pollution Sources

Many of the public health units have promoted walkable and transit-supportive communities, active transportation, public transit, energy efficient buildings, and alternative energies to improve local and regional air quality through educational programs and generic policies in local and/or regional official plans.

Several of the ten public health units are also working to protect residents from the elevated levels of air pollution that can occur in close proximity to point sources such as industrial facilities, linear sources such as high volume highways, and area sources such as truck depots by reviewing secondary plans, site plans, certificates of approval and environmental assessments.

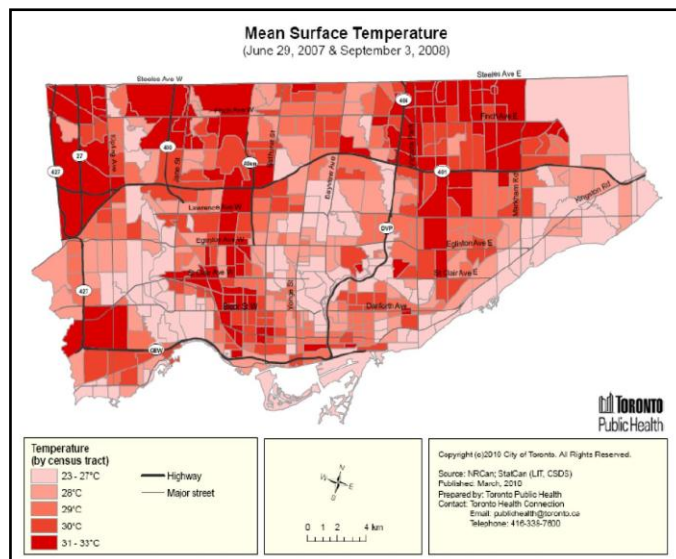
A few of these public health units (Halton, Peel, and York) have also worked to include specific policies into their regional official plans to address: cumulative air quality impacts; the need for air studies; the compatibility of land use mixes from an air quality perspective; and/or separation distances from high volume traffic corridors. A few health units (Halton and Peel) have also been working to establish airshed modelling and/or air monitoring programs that can inform land use and transportation planning processes.

Mitigating & Adapting to Climate Change

As with air quality, several of the public health units examined have been promoting the inclusion of policies related to walkable and transit-supportive communities, active transportation, public transit, energy efficient buildings, and alternative energy systems in official plans to encourage actions that reduce emissions of greenhouse gases to mitigate climate change.

Several have also been promoting official plan policies needed to adapt to climate change such as those which support green roofs, permeable paving, shade structures, urban forestry, and reflective surfaces. Some of these public health units have also adopted health promotion and/or health protection programs to address extreme heat, extreme cold, and insect-borne diseases that have been, and will be, exacerbated by climate change that is already occurring.

In addition, a few public health units have been promoting policies and actions needed to mitigate and/or adapt to climate change through implementation guidelines associated with land use planning processes and/or municipal programs. For example, Toronto Public Health has conducted GIS-based research work to identify areas of the city that experience higher temperatures because of the "urban heat island effect" and neighbourhoods in the community with a greater percentage of vulnerable residents. This research will be used to inform the implementation guidelines for the city's official plan, municipal programs such as the forestry program, as well as the health department's hot weather alert and response program.



Protecting Ground Water Resources

Several of the public health units examined (Sudbury, Grey Bruce, Halton and York) work through the land use planning processes to ensure that residents are protected from contaminated ground water and to protect ground water resources. For some, this work includes the review of environmental assessments, certificates of approval, subdivision plans, site plans, and severances for their potential to impact ground water quality and quantity. For a few public health units, it also involves the review and approval of private sewage disposal systems under agreements with local municipalities that are required to do this work under the Ontario Building Code. One public health unit reviews land use planning documents using Hydrogeological Guidelines referenced by the regional official plan. Under these guidelines, health staff can request hydrogeological assessments from proponents, which are peer reviewed by a hydrogeologist that the Region has on retainer, at the expense of the proponent.

Interventions & Low Income Populations

Active Transportation and/or Public Transit

The staff from all of the public health units interviewed expressed an interest in improving the health of low income populations by improving the built environment.

Almost all of the staff interviewed expressed the view that changes in the built environment that improve the walkability of communities, active transportation options, and/or the efficiency of public transit, were changes that would have disproportionate benefits for individuals who live on low income. Many of the staff interviewed also noted the importance

of active transportation and public transit for children, adolescents, the elderly, and people with physical or mental challenges who may not be able to drive.

Staff from several public health units (Sudbury, Waterloo and Toronto) have worked to ensure that individuals living on low incomes, and other vulnerable groups, are consulted and considered when transit plans, cycling plan, and pedestrian plans are being developed. These staff noted that it is particularly important to ensure that individuals who live on low incomes are well served by public transit and active transportation because they are more dependent on these modes of transportation than other members of the population.

Access to Healthy Foods

Staff in several public health units have noted that their annual *Nutritional Food Basket* reports indicate that a substantial percentage of people in their communities cannot afford to eat healthy foods. These reports identify housing as the expense which requires most of the income of individuals who live on low incomes. These findings suggest that more individuals and households living on low incomes would be able to afford healthy foods if there was a greater supply of affordable housing in their communities. Several public health units make this information available to decision-makers and the community to support calls for more affordable housing. At least one of the ten public health units (Sudbury) has been actively involved in community processes directed at poverty reduction and the creation of affordable housing.

Three public health units (Waterloo, Toronto and Sudbury) have taken steps to increase access to healthy foods in low-income neighbourhoods that are poorly serviced by food retail outlets. These actions have been taken in response to health literature which demonstrates that rates of obesity and chronic disease can be impacted by the accessibility of healthy foods, particularly among low-income populations. Staff in all three public health units articulated the positive co-benefits that can be associated with the siting of community gardens or mobile food markets in low income and/or high risk neighbourhoods, including an increase in social cohesion and neighbourhood safety.

Air Quality & Climate Change

While much of the work directed at air quality and climate change will create health benefits for all residents in the community regardless of their income levels, some of the actions and policies are expected to have greater benefits for low-income neighbourhoods. For example, Extreme Heat Vulnerability Maps are expected to result in programs and/or policies which prioritize low-income neighbourhoods for adaptation measures such as tree-planting and cooling centres in one health unit. With air quality, it is possible that policies directed at air studies, compatible land uses, and separation distances for high-volume traffic corridors could have a greater beneficial impact on low-income households and/or neighbourhoods that are more likely to be located in close proximity to emission sources.

Strategies Employed by Public Health Units

While there is a strong degree of overlap in the strategies employed by public health units to inform and/or influence the land use planning processes within their communities, there are significant differences in the emphasis for each.

Health Promotion & Community Engagement

Most of the ten public health units examined have health promotion programs directed at the built environment. These programs aim to increase awareness, shift attitudes, and change behaviour among residents in their communities on a broad array of issues in order to increase physical activity, prevent or minimize injuries, encourage healthy eating, and reduce emissions of air pollutants and greenhouse gases.



Several of the public health units examined are also engaging communities more directly on land use planning issues. For example, several offer active transportation or *walkON* workshops for residents, municipal staff and/or councillors. These workshops can include: training on what makes a community "walkable" or supportive of active transportation; a "walking tour" to ground the points presented; a discussion among participants about improvements needed in their neighbourhoods; and meeting notes that record the comments and recommendations developed by participants.

Cultivating Community Partnerships

Several of the public health units examined have made it a priority to work with their community partners on built environment and land use planning processes. These public health units are working with their community partners to provide comments on official plans, secondary plans, and transportation plans. In some cases, they and their partners are leading the development of active transportation plans or sustainable mobility plans that are being adopted by local councils and/or referenced in official plans. Supported by grants from the Ontario Government's Healthy Communities Fund and other sources, these public health units have collaborated with their community partners to produce comments and/or plans that benefit from both professional planning expertise and community consultation.

These public health units are also collaborating with community partners on the establishment of: recreational trails, fresh food programs that link local farms to community residents, community gardens, and affordable housing. Several are also collaborating with school boards on projects related to school travel planning; projects that are examining issues such as the safety and "walkability" of school routes and school properties.

Developing Relationships with Planning

Staff in autonomous public health units are developing relationships with decision-makers (i.e. councillors) and/or planners in the municipalities in their districts. For example, they have collaborated with their municipal partners on the organization of local conferences and the preparation of comments on the Provincial Policy Statement. One public health unit (Grey Bruce) assigned a staff person to work in-house with a local municipality for an extended period to develop a strong relationship between the municipality and the public health unit. Another public health unit (Simcoe Muskoka) assigned one person to be the point person for communications between the health unit and its many municipal partners to facilitate communication and collaboration between them.

The five public health units situated in regional governments have worked to establish relationships with their counterparts in planning. While these relationships provide public health with the opportunity to be "at the table", they also require that public health staff participate in a process that is led by another department and subject to a great deal of external pressure. Two public health units (Waterloo and Halton) have assigned one staff person to coordinate health's involvement in the land use planning processes for an extended period to help establish working relationships and processes between the two departments. Another public health unit (Peel) is hiring a planner to represent the health unit in the planning department for an extended period to help facilitate the relationship between the two organizations. One public health unit (Niagara) has seconded a staff person to work directly with the region's restructured planning department for an extended period to ensure that health concerns are identified and addressed at all stages in the land use planning processes.



Staff from Toronto Public Health have developed their relationship with their counterparts in planning by collaborating with them on municipal strategies (e.g. walking strategy), corporate programs (e.g. air and climate programs) and city standards (e.g. green building standard). They have also worked with planning to ensure that vulnerable populations are included in consultation processes directed at secondary plans and master plans.

Research & Policy Development

All of the ten public health units have conducted some research on issues related to the built environment but there are significant differences between health units on the depth of the extent and depth of research being done. Research can include literature reviews, policy

analyses, public surveys, analyses of health and population statistics, geospatial analyses, air monitoring and airshed modelling. This research has been directed at a variety of issues including:

- Physical activity, injuries, food access, air quality, and water quality as they relate to the built environment;
- The impact of densities, land use mixes and urban design on active transportation and public transit;
- The burden of illness as it relates to injuries, air quality, income, and extreme weather;
- Community food security, access to healthy foods, and local food systems;
- Public attitudes and behaviour related to active transportation, air quality, climate change, energy use practices, and public transit;
- Air quality beside high traffic corridors;
- Geospatial differences in air temperatures, air quality, age, incomes, and retail outlets that sell fresh foods across the community;
- Policies to address land use compatibility and air quality;
- Ground water contamination as it relates to karst topographies; and
- Health impact assessments; and
- Traffic calming measures.

Three public health units (Waterloo, Peel and Halton) have done research and/or policy development to directly inform and support the development of their regional official plans. Three (Waterloo, Peel and Toronto) are developing tools that can be used to assess health issues related to physical activity as part of the on-going land use planning process. Two (Halton and Peel) are developing air monitoring and/or airshed modelling tools that can be used to inform land use planning processes from an air quality perspective. At least one public health unit (Halton) is involved in the development of implementation guidelines for their regional official plan; one on healthy communities, one on air quality impact assessments, and one on land use compatibility. Two public health units (Simcoe Muskoka and Haliburton Kawartha and Pine Ridge) have participated in processes to develop urban design guidelines for local municipalities in their districts.

In some cases, this research/policy development work has been conducted in-house by health staff who then use the expertise gained to review, and comment on, planning documents. In other cases, this work is conducted by external consultants who have specialized training.

Commenting on Planning Documents

All four of the autonomous public health units have provided comments on official plans when provided the opportunity. Three have done this directly while one has done so in collaboration with its community partners. Several have participated in consultation processes directed at the development of master plans for transit, cycling and/or trails when provided the opportunity. Three have provided comments on secondary plans, subdivision plans and site plans when provided the opportunity, while one has made a decision not to get involved in the

review of these documents at this point because of resource constraints. Three of these health units are offering comments from a chronic disease, injury prevention and environmental health perspective, while one has been doing so from the chronic disease perspective only.

All five of the regional public health units have been directly involved in the development of their regional official plans. Three of these (York, Peel and Halton) provide comments on local official plans and secondary plans as well. Four have participated in consultation processes for master plans related to the planning process. Three (York, Halton and Niagara) systematically review subdivision plans and site plans; one primarily for environmental health issues and two for issues related to active transportation and injury prevention as well as environmental health issues.

Certificates of Approval & Environmental Assessments

Almost all of the public health units interviewed will review background documents related to certificates of approval or environmental assessments when there is the potential for substantial impact on the health of the community or in response to a request from decision-makers. These documents are usually reviewed from the health protection perspective for environmental health impacts related to water quality, air quality, contaminated soil, toxics, and sometimes noise and electro-magnetic fields associated with hydro lines and cell phone towers.



A few public health units are using these opportunities to raise issues related to cumulative air quality impacts, active transportation (e.g. paved shoulders and access issues) and climate change. One public health unit (Toronto) has conducted health impact assessments (e.g. to inform a corporate decision related to waste management) in response to a request from decision-makers.

Complementary & Contradictory Interventions

All of the staff interviewed recognized that much of the work that is being done by different staff on built environment and land use planning issues complement one another. For example, walkable and transit-supportive development patterns can have a positive impact on a number of risk factors that affect human health. The same can be said for: efficient transit services; active transportation infrastructure; equitably distributed trails, parks and greenspace; community gardens, mobile fruit markets, and green roofs; and shade structures.

Public health staff also recognize that there are situations where the messages directed at specific risk factors such as physical activity, extreme heat and smog can contradict one another. Within the public health units examined, staff are working to address these situations to ensure that the public receives clear and consistent messages.



Staff in a few public health units have also identified a few situations where the policies or guidelines directed at one risk factor through the land use planning process, can contradict the action needed to protect people from another risk factor. In these cases, staff have worked together to assess the risks associated with one factor against the benefits associated with another to make recommendations that reflect consideration of both.

Public health staff understand the many ways in which risk factors and built environment interventions are inter-related but do not always have the opportunity to address them in a holistic way because of "silos" that can exist between program areas and/or provincial ministries.

Program Areas, Functional Expertise & Roles

Program Areas and Functional Expertise

As noted in the background of this report, the 2008 Ontario Public Health Standards identify four functional approaches to be applied to each of the five program areas: assessment and surveillance, health promotion and policy development, disease and injury prevention, and health protection. In the two program areas that are involved with the built environment and land use planning processes, the Chronic Disease and Injury Prevention Program and the Environmental Health Program, the functional expertise and roles of the staff has historically been quite different.

Chronic Disease and Injury Prevention

Chronic Disease and Injury Prevention program staff tend to be public health nurses or health promoters who have strong training and/or experience doing health promotion and disease/injury prevention. They may also have some expertise and/or experience with assessment and surveillance and/or policy development, but it is unlikely that they have had much experience in the health protection role. As health promoters, their jobs often involve working with community partners and "making change happen", whether it is shifting the

attitudes and behaviour of people, or creating the policies or programs that affect people's attitudes and behaviours.

Environmental Health

Environmental Health program staff tend to be public health inspectors who have strong training and/or experience doing health protection work as well as some health promotion and policy development. They may also have some expertise/experience conducting research, doing assessment and surveillance work, but few have the time or opportunity to be involved in policy development work and/or health promotion that is directed at creating changes in attitudes, behaviours, and/or policies. As public health professionals, their jobs often require that they assess risks and hazards using existing regulations, standards and policies. Their jobs often require the interpretation and application of legislation. It also requires that they maintain some "distance" from community partners and residents so they can "rule" neutrally on situations in their health protection role.

Creating Specialized Positions

Among the ten public health units examined, some of the Chronic Disease and Injury Prevention teams have created specialized positions to allow staff to develop expertise and/or experience in research, policy development, and/or planning to help them to be more effective with policy development related to the built environment.

In addition, several of the Environmental Health teams have created specialized positions to allow staff to develop expertise and/or experience in research, policy development, toxicology, air quality, water quality, and/or health promotion to help them address issues related to the built environment such as air quality, climate change, pesticides, and toxic substances, where they have identified a need to supplement, or move beyond, their more traditional "health protection" role.



In some cases, these public health units have hired new staff with specialized training to fill these positions. A few have created teams with specialized expertise that provide research, policy and/or surveillance support to both program areas on built environment issues. Several have retained external consultants to assist with some aspects of their work on the built environment and/or land use planning processes.

Collaboration Across Program Areas on the Built Environment

Work on the built environment requires expertise and/or experience in all of the four functional areas identified by the Ontario Public Health Standards, as well as content expertise that is specific to each program area. It requires assessment and surveillance, health promotion and policy development, disease and injury prevention, and health protection.



Among all but one of the ten public health units examined, staff from both the Chronic Disease and Injury Prevention and the Environmental Health programs are involved in built environment and land use planning issues. However, staff from the two program areas are often employing different strategies to their respective issues that reflect the strength and/or role of their particular program area. For example, chronic disease and injury prevention staff are using community partnerships very effectively to promote active transportation, while environmental health staff are using their review function on environmental assessments and certificates of approval to advocate for improvements in air quality by taking a cumulative air quality approach.

Most of the public health units examined are exploring different ways to collaborate across program areas and disciplines to address built environment issues in a more holistic way. Among staff in both program areas, there is recognition that they are responsible for different risk factors that are inter-related, and that there are functional differences in the ways they work. As demonstrated by examples in the cases studies of these ten public health units, there are benefits for all built environment risk factors when staff from different program areas collaborate. For example, public health inspectors can identify opportunities to advocate for paved shoulders when reviewing environmental assessments, while health promoters could identify opportunities to educate community partners about the need for separation distances between highways and schools.

Organizational Structures

Restructuring and the New Ontario Public Health Standards

Most of the staff interviewed indicated that there had been on-going discussions within their health units about how to organize staff to address built environment issues which involve risk factors and health conditions that cut across program areas and disciplines. In some health units, these organizational discussions have been part of a larger discussion related to the new Ontario Public Health Standards that were adopted in 2008. Several individuals expressed the

view that health units have had to restructure in order to meet their obligations under the new standards which broaden the scope and responsibilities of health units at a time when they are not receiving increased resources. Others indicated that their health units were restructuring to ensure that the social determinants of health, which are clearly recognized in the new standards, are folded into their research, policy development, health protection, and health promotion programs in a more holistic way. Among the ten public health units interviewed, a variety of organizational approaches have been used to address the cross-cutting issues associated with the built environment and land use planning processes.

Creating Multi-Disciplinary Teams

A few public health units (Simcoe Muskoka and Grey Bruce) have created multi-disciplinary teams with staff trained in chronic disease prevention, injury prevention, and environmental health working collaboratively in a formal way on the built environment and/or land use planning processes. In one of these health units, a Built Environment Committee has been struck, which includes the Medical Officer of Health, a few directors, three managers, and two health promotion specialists, to provide strategic direction and support to front-line staff.

A few public health units (Peel and Halton) have identified leads from the various program areas involved in land use planning processes who collaborate together on those processes. In one of these health units, the team structure is supplemented by quarterly meetings of a Public Health Built Environment Committee which includes two directors, two managers from the Chronic Disease and Injury Prevention and Environmental Health Divisions, as well as the three Team Leads. In this particular health unit, one of the three team leads is a research and policy analyst from the Medical Officer of Health's Office.



Working from Informal Relationships

Several public health units (Niagara, Sudbury and Waterloo) indicated that, while they do not have multi-disciplinary teams or formal processes to ensure collaboration across the health unit, communication and collaboration between teams does happen effectively on an informal basis. Staff in Waterloo indicated that strong relationships between staff in different program areas developed during the years in which they all participated in a cross-divisional ad hoc committee that was struck to address land use planning issues. Sudbury encourages collaboration between teams/program areas by requiring staff from different program areas to collaborate on program planning for built environment issues.

Working through Committees

York has established a health and built environment work group, chaired by one manager from the Healthy Lifestyles Division and one manager from the Health Protection Division, to facilitate communication, respond to internal and external requests, identify and develop health and built environment indicators, build capacity and collaboration in the Public Health Branch.

Identifying a Point Person

Several health units (Simcoe Muskoka, Grey Bruce, Halton and Waterloo) found it helpful to assign one staff person with responsibility for coordinating the health unit's involvement in land use planning processes for an extended period of time until relationships and/or processes with their planning and/or municipal counterparts were solidified.

Healthy Public Policy Directorate

Toronto has established a new Healthy Public Policy Directorate that will do research and policy work on built environment issues with all of the risk factors combined, including socio-economic risk factors. In this case, "program staff" from the Healthy Living and Healthy Environments Directorates also engage directly in the land use planning processes.

Working Separately

Staff in the Haliburton Kawartha Pine Ridge District Health Unit indicated that there is no on-going collaboration between staff who work on chronic disease and injury prevention and those who work on environmental health issues. This team however, has recently been re-organized to broaden the scope of its work on land use planning processes to include issues beyond physical activity such as injury prevention and healthy aging.

IV Recommendations

It is recommended that:

1. The **Ministry of Health Promotion and Sport** continue to support public health units and non-profit organizations with their work on health and the built environment, particularly work directed at upstream policy interventions, with its Healthy Communities Fund;
2. The **Ministry of Health and Long-Term Care** establish a Healthy Communities Fund that will be used to fund public health units and/or non-governmental organizations that are doing research, policy development, and health promotion work directed at the built

environment with a particular focus on air quality, climate change, and/or vulnerable populations including low income populations;

3. The **Ministry of Health Promotion and Sport and the Ministry of Health and Long-Term Care**:

- a. Establish an inter-ministerial committee that can encourage collaboration across program areas on built environment issues among public health units and/or non-profit organizations that receive funding from either Ministry;
- b. Move to strengthen the requirements in the Ontario Public Health Standards that relate to work on health and the built environment;
- c. Recognize the positive impact that the current Provincial Policy Statement has had on land use and transportation planning processes in the province, and advocate for stronger language respecting the protection and promotion of human health;
- d. Through their Healthy Communities Funds, give priority to:
 - i. Social marketing projects that seek to educate the public about the many health, environmental, social and economic benefits associated with development patterns and built environment designs that support active transportation and public transit, both at the community level and on a province-wide basis;
 - ii. The development and application of health assessment tools that can be used to estimate the health impacts and health costs associated with land use and transportation decisions and policies from a physical activity, injury prevention and air quality perspective;

4. **The Province** establish a standing inter-ministerial committee on the built environment with the Ministries of Municipal Affairs and Housing, Transportation, Environment, Health and Long-Term Care, Health Promotion and Sport, and Education, which includes representatives from the Council of Medical Officers of Health, to coordinate work that impacts the land use and transportation planning processes;

5. The **Ontario Agency for Health Protection and Promotion**, in consultation with public health units and other stakeholders:

- a. Develop a Health Impact Assessment process and tool that can be applied to major projects that are currently subject to environmental assessments;
- b. Develop a Healthy Communities Screening Tool that can be used to guide public health professionals in the review of planning documents; and
- c. Identify, and facilitate access to, the health statistics data needed by public health units to support their work on the built environment and land use planning processes.



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