TORONTO

STAFF REPORT
ACTION REQUIRED

Health Benefits of a Low-Carbon Future

Date:	June 10, 2016
To:	Board of Health
From:	Medical Officer of Health
Wards:	All
Reference Number:	

SUMMARY

This report summarizes the results of a review of Health Benefits of a Low-Carbon Future. This review of published research was undertaken to identify the health benefits and any harms that are likely to result from actions that could be taken to reduce greenhouse gas (GHG) emissions in Toronto. This work is an element of Toronto Public Health's (TPH's) Climate Change and Health Strategy for Toronto, and it also supports TransformTO, the City's long-term GHG-reduction strategy being led by the City's Environment and Energy Division and Toronto Atmospheric Fund. The Health Benefits review examined health benefits and harms of GHG-reduction actions in the following sectors: transportation, buildings (including energy), urban form, food systems and waste management.

The results of this review indicate that actions to reduce GHG emissions in Toronto will also benefit health. GHG-reduction actions that are particularly beneficial to health are those that increase physical activity, reduce fossil fuel consumption and air pollutant emissions, reduce the risk of injury or encourage a healthier diet. Based on the published research reviewed, some GHG-reduction actions appear to be "win-win" options that have the potential to reduce GHG emissions and also benefit health, and merit further investigation. The review findings will be incorporated into TPH's future work and will inform the TransformTO process.

RECOMMENDATIONS

The Medical Officer of Health recommends that:

1. The Medical Officer of Health collaborate with the City's Chief Corporate Officer, and the Chief Executive Officer of the Toronto Atmospheric Fund, to contribute a health perspective to TransformTO;

2. The Board of Health forward this report to the Parks and Environment Committee; and

3. The Board of Health forward this report to the City Manager, Chief Corporate Officer, Chief Executive Officer of the Toronto Atmospheric Fund, Federal Minister of Environment and Climate Change, Federal Minister of Health, Chief Public Health Officer for Canada, Ontario Minister of the Environment and Climate Change, Ontario Minister of Health and Long-Term Care, and Chief Medical Officer of Health for Ontario.

Financial Impact

The recommendations have no financial impact beyond what has already been approved in the current year's budget.

DECISION HISTORY

On June 29, 2015, the Board of Health adopted the report, "*Climate Change and Health Strategy for Toronto*". The Strategy identifies specific actions to be taken by TPH to better understand and respond to the health effects of climate change. The Health Benefits of a Low-Carbon Future fulfills the Strategy's commitment to investigate and better understand the potential health benefits that result from reducing GHG emissions.
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.HL5.4

To address climate change, in 2007 City Council adopted the target of reducing GHG emissions by 80% by the year 2050, compared to 1990 levels. On May 5, 2015 City Council directed the Chief Corporate Officer to undertake TransformTO. It is a multi-year project led by the Environment and Energy Division (EED) and the Toronto Atmospheric Fund (TAF), in collaboration with City partners including TPH. The goal of TransformTO is to identify a path that will lead Toronto to the low-carbon future envisioned by Council, while maximizing health, equity and prosperity. The findings of the Health Benefits of a Low-Carbon Future review will provide input into the TransformTO process from a health lens.
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.PE3.6

ISSUE BACKGROUND

Climate change is affecting our health. As described in TPH's Climate Change and Health Strategy for Toronto, some of the health impacts are caused by gradual changes in climate. For instance, the arrival of new vector-borne diseases to Toronto, such as West Nile Virus and Lyme disease, may be at least partly due to a changing climate. Another

example is the growing potential for heat-related illness as Toronto's climate slowly changes, bringing longer heat waves of greater intensity in the coming years. Other health impacts result from sudden events related to climate change. For instance, severe weather events such as ice storms and floods have the potential to impact mental health and increase injuries during severe weather events and during the resulting clean-up.

Jurisdictions all over the world understand that managing the changing climate requires two approaches working hand-in-hand:

- **Climate change mitigation** efforts are those that reduce emissions of the GHGs that are causing the climate to change. The City of Toronto has set a target of reducing GHG emissions by 80% by the year 2050, relative to 1990 levels. The City's GHG mitigation strategy, TransformTO, is led by EED and TAF. TransformTO will identify a path to reach the City's target while maximizing health, equity and prosperity.

- **Climate change adaptation** efforts aim to increase the resilience of communities to the impacts of climate change, such as flooded buildings and electrical disruptions. The Resilient City is Toronto's climate change adaptation strategy, led by EED. Climate change adaptation efforts are necessary today because GHG emissions continue to rise.

The Health Benefits of a Low-Carbon Future review supports the City's climate change mitigation efforts. The purpose of the review is to better understand the health benefits, and potential harms, of GHG-reduction actions that could achieve the City of Toronto's 2050 GHG emission-reduction target.

The objectives of the review were to, through a review of published research: 1) identify the health benefits and harms resulting from potential GHG-reduction actions, and 2) identify considerations that could be used to prioritize, through a health lens, GHG reduction actions for implementation to meet the City's 2050 target. The review was commissioned by TPH and undertaken by IndEco Strategic Consulting Inc., in collaboration with TPH. The work benefitted from the expertise of an Advisory Group that provided advice throughout the project. The final report is available on TPH's website (www.toronto.ca/health).

The review fulfills a commitment made in the Climate Change and Health Strategy for Toronto and provides evidence to inform decision-making in TPH's future work and the TransformTO project. This report summarizes the findings of the review.

COMMENTS

Key findings: health benefits of actions to reduce GHG emissions

The review was based on two primary sources of information: 1) Toronto's 2013 Greenhouse Gas Inventory[1], and 2) the scientific literature. Information on the potential

health benefits and harms of GHG-reduction actions were organized and described based on the following sectors:

- Transportation
- Buildings (including energy)
- Urban form
- Food systems
- Waste management

Some key findings and examples of potential health benefits and harms of GHG-reduction actions of relevance to Toronto are described below.

Transportation

According to the review, transportation may provide the biggest opportunity to reduce GHGs, and have a significant benefit for health. Strategies that reduce the burning of fossil fuels for transportation lower the emissions of GHGs and can also benefit health by reducing emissions of air pollutants (e.g. nitrogen oxides and particulate matter) that cause cardio-respiratory illness. An example of a specific action that would have substantial benefit for health is accelerating the retirement of older model, heavy-duty, on-road diesel trucks. These trucks make up a relatively small proportion of the vehicles in Toronto, yet produce a disproportionately large share of air pollution from vehicles[2]. Policy to accelerate replacement of older diesel trucks, with fuel-efficient trucks equipped with modern emission control equipment, or with electric vehicles or low-emission alternatives where feasible, presents an opportunity to reduce GHG emissions while benefitting local air quality and health.

Strategies that increase the use of active transportation modes, such as walking and cycling, can benefit health by reducing the incidence of obesity, diabetes and other illnesses. As people switch from vehicles to walking and cycling, risks of injury to pedestrians and cyclists must be mitigated by planning complete streets, safe walking/cycling infrastructure, education for all road users on sharing the road, and suitable enforcement. Urban form, infrastructure and policies that make walking, cycling and transit the most appealing way to travel are essential to reducing transportation emissions and realizing the potential health benefits.

Buildings

Improving Toronto's existing, older apartment buildings can reduce energy consumption and provide good indoor air quality, temperatures that are safe and comfortable in summer and winter, and improved quality of life. In older apartment buildings, replacing windows, improving the building envelope, sealing cracks, replacing boilers and mechanical systems, and other improvements can reduce energy costs and improve comfort and quality of life. To prevent potential issues that can result from sealing the building, such as air quality or moisture issues, building retrofits must include appropriate ventilation systems that ensure sufficient fresh air and circulation.

Urban form
Urban form determines how we relate to our city. It significantly influences transportation choices and therefore health outcomes. Compact, dense, mixed-use neighbourhoods provide the goods and services that people need and the ability to access these goods and services without driving a car. Walkable, transit-oriented neighbourhoods with complete streets increase physical activity as part of daily living. Complete streets are streets that address the needs of all users and uses, including pedestrians of all ages and abilities, public transit, cyclists, and motorists. Complete streets also perform social, cultural, environmental and economic functions. These features of urban form also promote equity by increasing access to goods and services and removing the financial barrier associated with car use.

Healthy cities also include abundant, diverse and well-maintained green spaces. Green space provides relief from extreme heat and is associated with reduced mortality, obesity, depression, anxiety and cardiovascular disease[3].

Food systems
A healthy diet provides numerous health benefits, especially in combination with adequate physical activity. As such, there is a need to ensure equitable access to healthy, affordable food. There is also a need for urban form that enables people to obtain healthy food in their neighbourhood by walking, cycling or transit. Diets low in animal products, and high in fruits and vegetables, will reduce obesity-related health impacts and reduce GHG emissions at the point where the food is produced. Health benefits can result from improving the sustainability of the food system at all stages: production, processing, transportation, distribution, storage, consumption and disposal.

Waste management
Reducing waste benefits health by eliminating potential impacts to air, soil and water from waste transportation, processing and disposal. It also decreases upstream impacts from mining and refining of virgin materials, manufacturing processes, and distribution of materials that are later disposed.

Capturing methane from landfill has dramatically reduced Toronto's GHG emissions. Toronto is developing a Long Term Waste Management Strategy that prioritizes the reduction, reuse, recycling, and recovery of any remaining resources before final disposal. TPH conducted a rapid Health Impact Assessment[4] of the options in the Waste Strategy, and determined that the options with the greatest potential for health and equity benefits are those that focus on waste reduction and reuse. These options include a food waste reduction strategy, sharing libraries, and a textile collection and reuse strategy.

Key findings: health considerations for TransformTO

The review of published research indicates that many GHG-reduction actions that are good for health share common features. The types of GHG-reduction actions that benefit health are generally those actions that:

- Increase physical activity;

- Reduce fossil fuel consumption and air pollutant emissions;
- Reduce the risk of injury; or
- Encourage a healthier diet.

Based on the literature reviewed in the study, some GHG-reduction actions appear to be "win-win" options that have the potential to reduce GHG emissions and also benefit health, and merit further investigation. Many of these options also promote equity by reducing financial and other barriers. Some examples of "win-win" actions include:

- Complete streets that promote active transportation modes such as walking and cycling, paired with initiatives that promote road safety;
- Increased access to convenient, affordable, appealing transit service;
- Accelerated retirement of older model, heavy-duty diesel trucks;
- Improvements to existing and new apartment buildings to enhance energy efficiency, social cohesion and healthy living conditions; and
- Compact, mixed-use neighbourhoods that include desirable services, such as healthy food sources, within walking distance.

There are many other GHG actions that also benefit health. Overall, the published research demonstrates that actions to reduce GHG emissions have significant and diverse health benefits. Where actions to reduce GHG emissions would potentially result in health harms, generally these harms can be prevented by appropriate mitigation planning.

TPH will continue to work with EED and TAF to integrate key findings from this review into the TransformTO process. By incorporating a health lens, the City can identify a path to achieving the GHG-reduction targets while maximizing net benefits for health over the long term.

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SIGNATURE

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Dr. David McKeown
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[3] Toronto Public Health. 2015. Green City: Why nature matters to health – An Evidence Review. Report HL6.2. Available at: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.HL6.2

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