



## Climate Change Vulnerability Assessment of the Food System in Toronto

**Date:** June 28, 2018  
**To:** Board of Health  
**From:** Medical Officer of Health  
**Wards:** All

### SUMMARY

---

The City of Toronto has committed to building the City's resilience to climate change. In 2017, as part of its Climate Change and Health Strategy, Toronto Public Health began engaging stakeholders from across the food system to assess the impact of climate change, including potential impacts on vulnerable populations. The high-level analysis, documented in the report *Resilient Food Systems, Resilient Cities: A High Level Vulnerability Assessment of Toronto's Food System*, focused on the most significant, urgent climate resilience risks for the food system in the City. By studying relevant extreme weather events (significant rain that leads to widespread flooding, an extended heat wave, and a significant ice storm) that could impact Toronto, the City can determine where there are significant vulnerabilities and how to address them.

The Study's findings reveal that while extreme weather events could potentially disrupt Toronto's food supply, the current risk, especially on a massive scale, is relatively low. However, the study highlights that a concerted effort across the food system, including electrical and telecommunication service providers, is needed to address other key vulnerabilities that could impact food access, particularly in neighbourhoods that already experience high food insecurity. This report provides a summary of these vulnerabilities and recommendations aimed at reducing such vulnerabilities and impact on food access. Recommendations are grouped into food system transformation actions, community and neighbourhood resilience actions, and infrastructure and food industry sector resilience actions and emergency preparedness.

### RECOMMENDATIONS

---

The Medical Officer of Health recommends that:

1. The Board of Health request the Medical Officer of Health to work in collaboration with relevant City divisions to continue work initiated during the vulnerability assessment to:

- a. Further understand food distribution flows and in particular the "last-mile" food supply chain in Toronto; and,
- b. Incorporate a food access lens including food distribution flows in all City resilience strategies and emergency plans, particularly for vulnerable neighbourhoods.

2. City Council request the Executive Director, Social Development, Finance, and Administration, in collaboration with relevant City Divisions, to develop community food resilience action plans for vulnerable neighbourhoods with critical food access issues, in order to identify strategies and best practices to increase food access and affordability in these neighbourhoods and develop emergency food response plans.

3. The Board of Health forward this report and Attachment 1, Resilient Food Systems, Resilient Cities: A High-Level Vulnerability Assessment of Toronto's Food System to the Ontario Ministry of Agriculture, Food and Rural Affairs and the Ontario Food Terminal, to inform them of the risks associated with an extended electrical power disruption at the Ontario Food Terminal.

## **FINANCIAL IMPACT**

---

There is no financial impact associated with this report.

## **DECISION HISTORY**

---

At its meeting of June 29, 2015, the Board of Health adopted the *Climate Change and Health Strategy* which set out actions to better understand and respond to the health effects of climate change. Among these was the action to assess the impact of climate change on food safety, food security and sustainability

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.HL5.4>.

## **COMMENTS**

---

In 2017, as part of its Climate Change and Health Strategy, Toronto Public Health (TPH) began engaging stakeholders from across the food system to assess the impact of climate change on the food system, including potential impacts on vulnerable populations. As part of this work TPH, in collaboration with Environment and Energy Division (EED), engaged the Initiative for a Competitive Inner City (ICIC) to conduct a climate change and vulnerability assessment of the food system in Toronto. The assessment focused on the most significant, urgent climate resilience risks. By examining extreme weather events, the consultants were able to identify significant vulnerabilities. The assessment was informed by a literature review, a review of actions in eight other cities considered leaders or peers in food resilience, analysis of public and proprietary data sets, a facilitated High-level Risk Assessment (HLRA) workshop, and interviews with 49 individuals from across the food system.

The attached report Resilient Food Systems, Resilient Cities: A High-Level Vulnerability Assessment of Toronto's Food System, was the end result of this assessment, and identifies the City's food system vulnerabilities and includes recommended actions to increase resiliency, while improving day-to-day functions to reduce chronic stressors including food insecurity.

#### Vulnerability Assessment

Three weather events (significant rain that leads to widespread flooding, an extended heat wave, and a significant ice storm) have caused extensive damage across the City. It is expected that Toronto will experience more severe/extreme weather in future due to climate change.

The vulnerability assessment examined food supply, access, safety and security by analyzing extreme weather impacts on seven sectors of the food system (regional and local food production, food processing, food distribution, food retail, restaurants, food assistance network, and home meal preparation) and five critical, supporting systems (public transportation, road network, electrical power system, telecommunications, and fuel supply transportation, storage and distribution). Three tools guided the analysis:

- The Ontario Climate Change and Health Vulnerability and Adaptation Assessment Guidelines;
- City of Toronto's High-level Risk Assessment (HLRA) Tool; and
- Initiative for a Competitive Inner City's Framework for Analyzing Urban Food System Resilience.

The City of Toronto has an emergency food plan to cover the distribution of food and water in the immediate aftermath of any disaster, while TPH has plans to address public food safety issues. Given estimates that less than 10 percent of all food consumed by Toronto residents is produced in the region, the impact of local extreme weather events on regional food production would be minimal.

However, the analysis identified key vulnerabilities that could impact food access, particularly in vulnerable neighbourhoods:

#### 1. Flooding

The impact of an extreme rain event is the least well understood compared to extreme heat and an ice storm, because “urban flooding” has not yet been fully modeled for the city. Given the research to-date, however, river and urban flooding pose the greatest risk of the three extreme weather events studied for dairy processing, commercial bakeries, warehouse suppliers, the Ontario Food Terminal, food retail stores, and restaurants.

#### 2. Electricity, Road Network and Fuel Infrastructure

Supporting infrastructure systems are critical for the food system: public transportation, road network, electrical power system, telecommunications, and fuel supply transportation, storage and distribution infrastructure.

### 3. The Ontario Food Terminal

The Terminal represents a significant vulnerability for the supply of fresh produce in Toronto because of its market dominance, especially for smaller, independent food retail stores. The Terminal's location in a flood risk zone and its power supply configuration make it susceptible to power outages and it does not have sufficient backup power.

### 4. Vulnerable neighbourhoods

Food access in certain neighbourhoods will be disproportionately impacted by extreme weather events due to a lack of large food retail stores, higher rates of food insecurity and numerous older residential high-rise communities. Vulnerable populations living in older high-rises could be significantly impacted, particularly people with low mobility. Seven neighbourhoods are particularly vulnerable: Dorset Park, Downsview-Roding-CFB, Humbermede, Ionview, Rustic, Scarborough Village and Thistletown-Beaumont Heights.

### 5. Food insecurity

Food insecurity is a systemic vulnerability in Toronto that would be exacerbated by extreme weather events. Although food banks and other food assistance organizations were created to help people in need during times of severe financial constraint, they are supporting those in need for longer periods of time than intended. Therefore, while they are not part of Toronto's emergency food distribution plans, their limited capacity to meet a prolonged increase in demand for food assistance as more households become food insecure due to disaster-related expenses or loss of income is a critical component of equitable food resilience.

### 6. Coordination

Food system stakeholders expressed concern that more preparedness planning is required to ensure coordination and effective communication between government agencies and food businesses during and after an extreme weather event.

Aligned with on-going cross divisional resilience initiatives, the food system vulnerability assessment identified opportunities to improve resilience and equity. The analysis points to actions that can be taken to address the key vulnerabilities identified. No additional resources will be required from the City of Toronto to integrate a food vulnerability lens into existing work. However, additional external resources will be required, and actively sought, to conduct follow-up research for food flow analysis, partnership development and to embed food systems into the City of Toronto Resilience Strategy. This report summarizes these actions:

#### *Food System Transformation Actions*

The City of Toronto has developed a food strategy and poverty reduction strategy that addresses food access and food security issues. However, there is a need to further integrate a food resilience framework into these strategies. A more in depth food flow analysis would identify vulnerabilities and opportunities to increase resilience at both neighbourhood and city-wide levels. Examining the last mile, the final leg of food

distribution, is an integral step to understanding how food is distributed to various communities, particularly those that are most vulnerable to food shortages in an extreme weather event and those neighbourhoods that have poor access to high quality food on an ongoing basis. Further study of last mile logistics would reveal the efficiencies and inefficiencies of the current food supply chain as well as gaps and possible strategies for action. This type of analysis will allow the City of Toronto to identify supply chain solutions for tracking food and distribution solutions particularly for those residents who are the most food insecure. Additional information could be added to emergency plans if concerns are identified such as mapping priority food retail outlet locations in vulnerable neighbourhoods and providing this information to emergency planners. Additional capacity could also be given to not for profit suppliers like foodbanks to increase food distribution capacity.

Toronto Public Health has expertise to lead this initiative in collaboration with other City Divisions and community and private sector partners and will continue the work initiated during the vulnerability assessment, especially around food distribution flows and in particular the "last-mile" supply chain in Toronto. By incorporating a food access lens, City resilience strategies and emergency plans can mitigate risk, particularly in vulnerable neighbourhoods.

#### *Community & Neighbourhood Resilience Actions*

Many existing vulnerable neighbourhoods may become isolated during an extreme weather event. Developing local community food resilience action plans and food emergency response plans particularly in neighbourhoods with critical food access issues can help address food insecurity and increase communities' emergency food preparedness, response and recovery. This would build on existing community assets but would also identify gaps in the supply chain. Social Development, Finance, & Administration has expertise to lead this work in collaboration with other City divisions, including TPH.

#### *Infrastructure & Food Industry Sector Resilience Actions and Emergency Preparedness*

The food sector is highly dependent on different forms of infrastructure such as electricity, roads, water supply, and telecommunications. It is important to understand how those systems could be at risk due to extreme weather and to identify ways to improve resilience of the City as a whole, and the food system in particular. An extended power disruption at the Ontario Food Terminal would affect availability of fresh food to a very large number of Toronto and Ontario based independent food businesses and consumers in Toronto and beyond. The food industry sector has a critical role in building resilient and sustainable food systems, including being prepared in the event of an emergency.

Approved initiatives are underway across many City Divisions. The Medical Officer of Health has provided *Attachment 1: Resilient Food Systems, Resilient Cities: A High-Level Vulnerability Assessment of Toronto's Food System* to the following Divisions and they have advised that they will be applying a food system lens in the following ways:

- The Environment and Energy Division include identification of significant vulnerabilities for the food system in plans to conduct a High-Level Risk Assessment (HLRA) with Toronto's liquid fuel sector and to consider alternative fuel sources such as renewable energy in future work.
- The Office of Emergency Management will use this report to inform their risk specific plan on power disruption, critical infrastructure assessment, hazard identification risk assessment, and the consequence of a long duration power outage and food related issues.
- As a future phase of the work of the Chief Resilience Officer's Urban Flooding Working Group, a long term goal is the development of urban flooding risk maps with an overlay of critical infrastructure, including major food system assets that may be at risk of flooding.
- In addition, the Chief Resilience Officer, in collaboration with other City Divisions should, as part of the Resilience Strategy, engage stakeholders from the food sector (both private sector and provincial and federal government officials) on the topic of food system resilience to extreme weather and power disruption to:
  - a. Strengthen working relationships with the food sector and ask that they assess their capacity to remain in basic operation during an extended power disruption;
  - b. Assess the need to collaborate on municipal and provincial disaster preparedness planning regarding the food system and identify if any mitigation strategies are required for the food sector for extreme weather events and extended power disruption; and
  - c. Consider the need for food sector specific guidance for emergency preparedness to ensure continuity of food supplies. The Chief Resilience Officer has indicated, however, that additional resources will be required to conduct this work.

Building on ongoing initiatives, multi-sectoral collaboration is required to ensure that the food system is considered in resilience planning and climate change adaptation. As with all resilience efforts underway, the City of Toronto will need to work across Divisions and with many different public and private organizations to address vulnerabilities and strengthen the resilience of the food system in Toronto. Toronto is already recognised as a global leader in food system planning. The City is a member of C40's Food Systems Network, a Resources for Urban Agriculture and Food (RUAF) partner and is a signatory city to the Milan Urban Food Policy Pact, which promotes the development of sustainable food systems that are inclusive, resilient, safe, diverse, and able to adapt to and mitigate impacts of climate change. Actions to address the vulnerabilities identified in this high-level vulnerability assessment will build on current work to strengthen the City's resilience to extreme weather events that are expected to become more severe with climate change.

## **CONTACT**

---

Jann Houston, Director, Strategic Support, Toronto Public Health, Phone: 416-338-2074, Email: Jann.Houston@toronto.ca

Barbara Emanuel, Manager, Toronto Food Strategy, Toronto Public Health, Phone: 416-392-7464, Email: Barbara.Emanuel@toronto.ca

## **SIGNATURE**

---

Dr. Eileen de Villa  
Medical Officer of Health

## **ATTACHMENTS**

---

Attachment 1: Resilient Food Systems, Resilient Cities: A High-Level Vulnerability Assessment of Toronto's Food System