

|  |  |
|--|--|
|  |  |
|--|--|

APPENDIX A

MIDDLESEX-LONDON HEALTH UNIT – Beverage Vending Review

---

**City of London  
Beverage Vending Review**



January 6<sup>th</sup>, 2017

For information, please contact:

Linda Stobo  
Middlesex-London Health Unit  
50 King St.  
London, Ontario  
N6A 5L7  
phone: 519-663-5317, ext. 2388  
e-mail: [health@mlhu.on.ca](mailto:health@mlhu.on.ca)

MIDDLESEX-LONDON HEALTH UNIT – Beverage Vending Review

---

© Copyright 2017  
Middlesex-London Health Unit  
50 King Street  
London, Ontario  
N6A 5L7

Cite reference as: Middlesex-London Health Unit (2017).

City of London Beverage Vending Review.

London, Ontario: Iman Algeriany, Todd Coleman, Ellen Lakusiak, Kim Loupos, Linda Stobo, Heather Thomas

Authors: Iman Algeriany, Todd Coleman, Ellen Lakusiak, Kim Loupos, Linda Stobo, Heather Thomas

All rights reserved.

## Table of Contents

---

|   |    |
|---|----|
| Acknowledgements.....   | i  |
| Executive Summary .....   | 1  |
| Introduction.....   | 4  |
| Survey Methods.....   | 6  |
| Survey Results.....   | 7  |
| Evidence-Informed Recommendations: Behaviour and Policy Considerations .....                          | 11 |
| Selected Lessons from the Field: What have other municipalities done?.....                            | 15 |
| Policy Options for Municipally Run Facilities.....  | 17 |
| Recommended Policy Option: Remove All Beverage Vending Machines.....                                  | 21 |
| Next Steps and Conclusions.....   | 23 |
| References .....  | 25 |
| Appendix A – Survey Tool.....   | 30 |
| Appendix B – Data Collection Quotas per Location .....  | 36 |
| Appendix C – Recommendations Summarized from the Evidence .....                                       | 37 |
| Appendix D – Lessons from the Field: What have other municipalities done? – Additional Examples ..... | 38 |
| Appendix E – Q&A: Sale of Sugar-Sweetened Beverages on Municipal Property.....                        | 42 |

---

## Acknowledgements

The authors would like to thank the following colleagues who assisted in the development of this research project and report:

Carolynne Gabriel, Librarian, Program Planning and Evaluation, Middlesex-London Health Unit

Yvonne Tyml, Librarian, Program Planning and Evaluation, Middlesex-London Health Unit

Bernie Lueske, Data Analyst, Program Planning and Evaluation, Middlesex-London Health Unit

Khoaja Khaled, Data Analyst, Program Planning and Evaluation, Middlesex-London Health Unit

Dr. Christopher Mackie, Medical Officer of Health and CEO, Middlesex London Health Unit

Suzanne Vandervoort, Director, Healthy Living Division, Middlesex-London Health Unit

Theresa Kirk, Administrative Assistant, Healthy Living Division, Middlesex-London Health Unit

Darlene Foster, Administrative Assistant, Healthy Start Division, Middlesex-London Health Unit

Amy Castillo, Program Assistant, Chronic Disease Prevention and Tobacco Control Team, Middlesex-London Health Unit

Alex Tyml, Online Communications Coordinator, Middlesex-London Health Unit

Sarah Neil, Public Health Nurse, Chronic Disease Prevention and Tobacco Control Team, Middlesex-London Health Unit

Youth Leaders from *One Life One You*, Middlesex-London Health Unit

Catherine Andru, Jennifer Beverley, Johanna Selga and Samantha Breau, Student Volunteers, Brescia University College

Scott Oldham, Manager of Business Solutions and Customer Service, City of London

Cassie Vivyurka and Noreen Spruyt, Staff, City of London

Heart and Stroke Foundation of Ontario

## Executive Summary

On the recommendation of the Managing Director of Parks and Recreation, the Community and Protective Services Committee of London City Council approved an extension not to exceed six months to the current beverage vending contract with PepsiCo Beverages Canada to allow Civic Administration additional time to review beverage vending options. In September 2016, staff from both the City and the Middlesex-London Health Unit (Health Unit) began working together on the City of London Beverage Vending Review Project. A research team comprised of representatives from the Health Unit and the City of London was created to:

- assess current beverage vending machine offerings;
- conduct a survey to seek input from facility users and City of London residents on what changes could be made to the beverage vending machine environment in city-run facilities;
- review the literature and conduct an environmental scan to inform proposed changes; and
- propose policy options for consideration based on the survey results, recommendations documented in the literature on how to improve the food environment and lessons learned from other municipalities.

A cross-sectional questionnaire of patrons of city-run facilities, including arenas, aquatic centres, community centres, Storybook Gardens and the cafeteria in City Hall, was used to seek public input. In-person and online surveys were collected over a three-week period, from October 6 to 26, 2016. The survey results indicate that the majority (82.5%) of facility users are bringing beverages from home into city-run facilities: water in a refillable bottle (75%); coffee and/or tea (58%); water in a single-use bottle (23%); and sports drinks (21%). The survey results highlight that facility users are ready for some changes to be made to drink options available within beverage vending machines, including the removal of pop and soft drinks (48.3% agreed/strongly agreed) and the removal of energy drinks (63.5% agreed/strongly agreed). The results in support of the continuation of the sale of certain sugar-sweetened beverages (SSBs), including sports drinks, vitamin waters and juices indicate a misconception that some SSBs are needed for hydration during physical activity, or that these are “healthier” choices. Further, the results highlight that the majority of facility users (60.8%) support the sale of single-use bottled water in beverage vending machines, because water is a healthy drink and should be made available as a choice (67%) and in the event that facility users forget their own water or are unaware of the water stations (75%) within city-run facilities.

While the scope of the review was limited to beverage vending, public support for changes to snack and bulk candy vending machines in city facilities was also gauged. The majority of facility users (58.1%) support the removal of bulk candy vending machines from city-run facilities; however, there was clear disagreement (66.3% disagreed/strongly disagreed) regarding the removal of snack vending machines. The Health Unit recommends that the bulk candy vending machines be removed. The removal of these machines will reduce the distribution of bulk candy—candy which is nutrient-poor and very high in sugar (e.g., gumballs, hard candies, chocolate snacks, etc.). The Health Unit recommends that the City conduct a review of the snack food environment, specifically addressing snack food options within vending machines and concession stands, to see what improvements could be made.

After careful consideration of five different policy options for beverage vending, the Middlesex-London Health Unit recommends that the City of London implement policy option #1, the removal of all beverage vending machines in city-run facilities.

#### **Rationale for Policy Option #1 – Remove All Beverage Vending Machines**

Arenas, aquatic centres and community centres are priority settings for supporting healthy eating behaviours among children, youth and families (Naylor, Olstad & Themen, 2015). The complete removal of vending machines containing SSBs and the installation and promotion of water fountains, versus the addition of “healthier” beverages, is recommended because children are more likely to purchase SSBs regardless of the availability of healthier drink choices (Chen & Wang, 2016; Jones, Gonzalez & Frongillo, 2009).

- SSBs are the single largest source of sugar in the diet. A single 355 mL can of sugar-sweetened soda contains approximately 40 grams (about 10 teaspoons) of sugar with no health benefits (World Health Organization (WHO), 2015).
- The elimination of the sale of all sugary beverages from vending machines, including sports drinks, vitamin water and juices sends a consistent health message that all sugary drinks contribute to the negative health effects of too much sugar in the diet. This approach avoids “health washing,” which labels some SSBs as “healthier” compared to others.
- Water is the best choice to satisfy thirst, to stay hydrated and to feel energetic and alert (Centers for Disease Control and Prevention (CDC), 2010).
- Plain tap water is safe and easily accessible to children and adults both at home and in city-run facilities from water fountains and bottle-filling stations.
- When children are encouraged to drink water at a young age, they are more likely to drink water later in life (Birch, Savage & Ventura, 2007).
- Children with high intakes of SSBs are more likely to be overweight or obese. Each additional SSB consumed per day increases a child’s risk of becoming obese by 60% (Ludwig, Peterson & Gortmaker, 2001).
- The sugar in SSBs promotes bacterial growth and the acid in carbonated drinks weakens teeth, which can lead to cavities.
- The majority of London facility users (82.5%) bring beverages, of their choice, from home.
- The removal of beverage vending machines will reduce the number of plastic bottles that find their way into recycling and waste systems. This approach supports the City’s current ban on the sale of bottled water.
- Decreased distribution of SSBs by the City of London demonstrates leadership in promoting health and creating healthy environments for those families who access programs and services.

This change in support of healthy environments for children has already started in the City of London with the removal of beverage vending machines from most, if not all, local elementary schools. All single-use bottles require fossil fuels for their production and transport, and contribute to plastic bottle

waste regardless of the type of beverage they contain; therefore, the removal of beverage vending machines would have a positive impact from both a health and an environmental perspective. Municipally run facilities serve as community hubs and have the ability to reach and impact a broad cross-section of the population, including higher-need individuals and families. These facilities have the opportunity to help set a foundation for lifelong healthy lifestyles, and are ideal settings for the promotion of a healthy food environment.

Changes to the distribution of SSBs in vending machines at city-run facilities will have a positive health impact on our community. Given the survey results, the promotion of water consumption through the Healthy Kids Community Challenge community initiatives, and this beverage vending machine review, this is an opportune time for the Health Unit and the City of London to engage in public education activities: to promote municipal water as the beverage of choice; to address the “health washing” of various SSBs; and to increase public awareness regarding the health risks associated with the consumption of all SSBs.

The City of London is a leader in public service collaboration and innovation, and has identified health promotion and protection as a strategic priority. This report clearly outlines potential long-term health benefits that could be achieved by making improvements to the food environment within city facilities. This report and its recommendations highlight the unique role that municipal governments and health units can play in working together to improve our food environment and to make the healthy choice the easy choice.

## Introduction

Sugar consumption has progressively become a major public health concern. Data reveals that one in every five calories consumed by Canadians originates from sugar (Langlois & Garriguet, 2011). Excessive intake of “free” sugar (both added sugar and sugar naturally found in food) has been linked to obesity, type 2 diabetes, cardiovascular disease, dental caries, metabolic syndrome and a lower intake of nutrient-dense beverages such as milk (Standing Senate Committee, 2016; WHO, 2015).

Sugar-sweetened beverages (SSBs) are any beverage to which sugar has been added, including soft drinks, fruit drinks, sports drinks, sweetened tea and coffee drinks, energy drinks and sweetened milk or milk alternatives (CDC, 2010). In recent guidelines, the WHO (2015) included sugar naturally present in fruit juices as “free” sugars, which increase individual risk of chronic diseases. In 2004, Statistics Canada reported that beverages including soft drinks, fruit drinks, juice and milk contributed to 44% of the average daily sugar intake of children and adolescents and 35% of adults’ average daily sugar intake (Langlois & Garriguet, 2011).

The Institute of Medicine (2012) has concluded that the intake of SSBs is one of the dietary factors leading to the increase in obesity and overweight rates in the United States. In children, studies reveal that a higher intake of SSBs increases risk of overweight or obesity by 55% (Te Morenga, Mallard & Mann, 2013).

According to the most recent Ontario statistics, close to 60% of adults self-report being overweight or obese, and in Middlesex-London this rate is somewhat higher, at almost 64% (Canadian Community Health Survey (CCHS), 2014). In Ontario, 25.5% of youth aged 12–17 self-report being overweight or obese (CCHS, 2014).

In addition to physical health, dietary choices impact mental health, cognitive function, the ability to focus and sleep patterns. The evidence shows that healthy children perform better academically, have better attendance and behaviour at school, and have improved concentration, memory and mood (CDC, 2014). Properly nourished children are more likely to grow and develop into healthy, active adults (Ontario Ministry of Child and Youth Services, n.d.).

Foods and drinks sold in recreation centers, schools, variety stores and workplaces have been recognized for having a significant influence on diet and health (National Collaborating Centre for Environmental Health (NCCEH), 2014). As such, considering improvements to the food environment is a priority for the Middlesex-London Health Unit (Health Unit). When choosing a beverage, water is the best choice for health and hydration, containing no sugar, calories, additives, preservatives or caffeine. When children and youth drink water instead of choosing an SSB, they are likely to consume fewer total calories per day (Han-Markey, Wang, Scholterbeck, Jackson, Gurm, Leidal & Eagle, 2012).

On the recommendation of the Managing Director of Parks and Recreation, the Community and Protective Services Committee of London City Council approved an extension not to exceed six months to the current beverage vending contract with PepsiCo Beverages Canada to allow Civic Administration additional time to review beverage vending options in arenas, community centres, aquatic centres, Storybook Gardens and the cafeteria in City Hall. In September 2016, City staff, in partnership with the Health Unit, initiated the City of London Beverage Vending Review Project. The alignment of this



vending review project with the City of London and Middlesex-London Health Unit strategic priorities and community initiatives is summarized in Table 1.

Table 1

*Alignment of the Beverage Vending Review Project with City of London and Middlesex-London Health Unit Strategic Priorities and Community Initiatives*

|   |
|---|
| <b>London City Council Strategic Priorities</b>   |
| <ol style="list-style-type: none"> <li>1. <b>Strengthening Our Community:</b> Work with the Middlesex London Health Unit to promote and protect the health of the community.</li> <li>2. <b>Leading in Public Service:</b> Foster collaboration and innovation through a variety of mechanisms.</li> </ol>  |
| <b>Middlesex-London Health Unit Strategic Priorities</b>  |
| <ol style="list-style-type: none"> <li>1. <b>Program Excellence:</b> Foster strategic integration and collaboration; optimize evidence-informed planning and evaluation.</li> <li>2. <b>Client and Community Confidence:</b> Seek and respond to community input.</li> </ol>  |
| <b>Community Initiatives</b>  |
| <ol style="list-style-type: none"> <li>1. <b>London’s Child and Youth Network Healthy Eating Healthy Physical Activity Priority:</b> A community network composed of over 170 agencies and individuals. This priority is focused on improving healthy eating and physical activity through engagement and influencing habits.</li> <li>2. <b>Healthy Kids Community Challenge:</b> A province-wide initiative coordinated at the municipal level funded by the Ministry of Health and Long-Term Care. The focus of the 2016/2017 theme is on drinking more water and fewer sugary drinks. The 2017/2018 theme is on promoting the consumption of vegetables and fruit.</li> </ol> |

A research team comprised of representatives from the Health Unit and the City of London was created to:

- assess current beverage vending machine offerings;
- conduct a survey to seek input from facility users and City of London residents on what changes could be made to the beverage vending machine environment in city-run facilities;
- review the literature and conduct an environmental scan to inform proposed changes; and
- propose policy options for consideration based on the survey results, recommendations documented in the literature on how to improve the food environment and lessons learned from other municipalities.

This report documents the results of the survey, recommendations from the literature and the environmental scan, and policy options for consideration. The report makes a recommendation to the City of London on which policy option would have the greatest positive health and environmental impact and outlines some proposed steps if a policy change were to be implemented.

The recommendations contained within this report highlight the unique and significant role that municipal governments and health units can play in working together to influence our food environment to make the healthy choice the easy choice.

## Survey Methods

A cross-sectional questionnaire of patrons and employees of city-run facilities, including arenas, aquatic centres, community centres, Storybook Gardens and the cafeteria in City Hall, was used to seek input from facility users and London residents. The self-administered, sixteen-item questionnaire (see Appendix A) was available to complete both in paper-and-pencil and online formats. Two different modes (paper-and-pencil and online) of the questionnaire were developed to ensure broad representation of respondents from across the City of London. The questionnaire was developed by Health Unit staff and piloted by Health Unit administrative assistants not directly involved in this project.

For the paper-and-pencil versions, sample size estimations calculated a minimum required sample of 384 individuals, rounded up to 400. To determine an appropriate sample size of survey respondents from each facility, City staff provided the number of annual visits by patrons at each facility. Using representative proportions of attendees at city-run facilities, including the cafeteria at City Hall, quotas were established for peer research assistants (RAs) to collect data in paper-and-pencil format at every facility (see Appendix B). The RAs were casual staff from the City of London, Youth Leaders from the Health Unit's *One Life One You* youth advocacy team, student volunteers, a Dietetic Intern from Brescia University College and two members of the research team. All RAs received in-person training and procedural instructions for survey administration. They worked in pairs and visited each facility where in-person data collection occurred. RAs attended facilities at peak times during week and weekend days and evenings to facilitate obtaining the quotas set for the in-person survey completion. Due to survey collection timing, in-person data collection did not occur at Storybook Gardens.

The research team used a supplementary method to collect surveys by distributing the link to the survey online via the Health Unit website. The online survey link was promoted to City of London employees on the City of London Intranet, and the online survey link was sent directly to 3,000 residents that subscribe to the City of London e-newsletter, to ensure broad representation. The online version of the questionnaire was delivered using SurveyMonkey® software. Paper-and-pencil surveys were entered into the SurveyMonkey® software to merge data.

The survey took approximately five minutes to complete, and was conducted from October 6 to 26, 2016. Overall, 491 patrons at city facilities completed the paper-and-pencil survey. An additional 465 participants completed the online survey. The total number of surveys completed, both in-person and online, was 956.

Data from both paper-and pencil and online surveys were analyzed using Stata (version 14.1), available in SurveyMonkey®. The distinction between paper-and-pencil surveys and online surveys was captured in the survey's introductory question, to facilitate separate analysis of specific sites, if warranted. Counts and frequencies were assessed and summarized, reviewed based on the combined sample, the survey completion type (online vs. physical venue) and the combined total of all respondents who had ever attended a city-run facility.

## Survey Results

A total of 956 surveys were completed, with 51.4% completing paper copies of the survey and 48.6% completing the survey online. The majority of all patrons surveyed were between the ages of 25 and 44 years (45.5%). Patrons indicated they typically used arenas most frequently (30.0%) of all city facilities, and they did so a few or more times per week. As depicted in Figure 1, the majority of all respondents to both the online and in-person survey that accessed city facilities (82.5%) indicated they bring beverages from home for consumption when in city facilities.

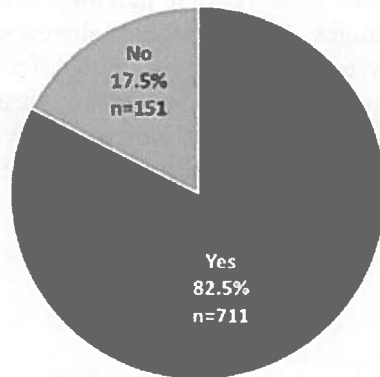


Figure 1. Proportion of city facility users that bring beverages from home into city facilities.

Most patrons brought water in a refillable bottle (83.1%) and coffee and/or tea (64.7%). Figure 2 provides a summary of the types of drinks that facility users reported bringing from home.

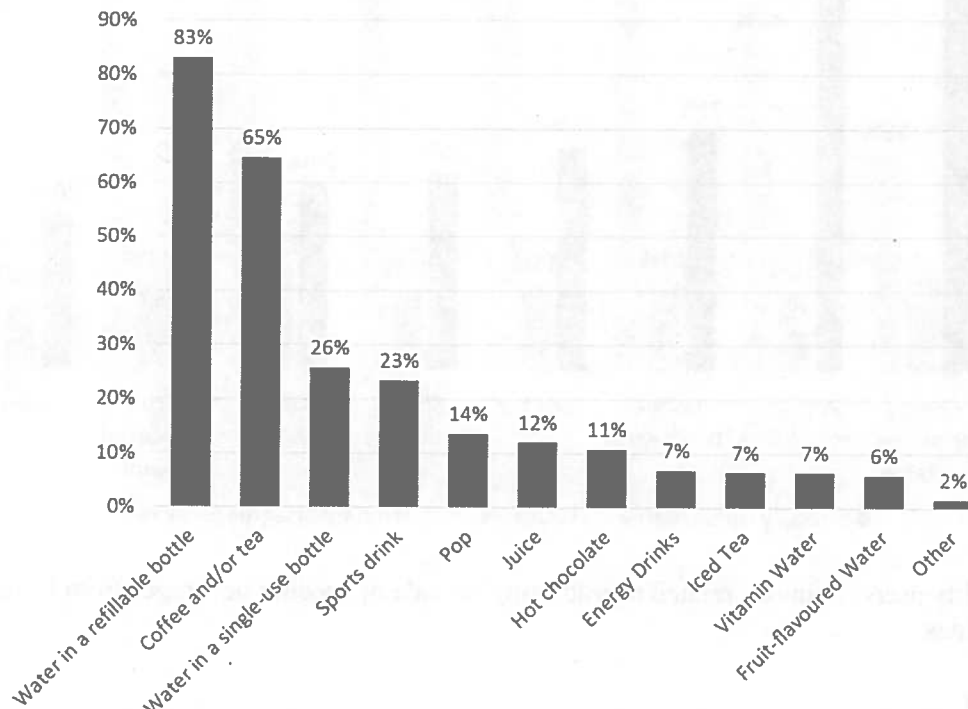


Figure 2. Proportion of types of drinks brought from home by city facility users.

A majority of all respondents who access city facilities (65.5%) have purchased drinks from vending machines in city facilities. Most frequently, they purchase one drink (81.2%) for either themselves (61.5%) or their children (50.6%).

**Sugar-Sweetened Beverages**

When asked about their opinions related to restricting the sale of specific beverages from beverage vending machines, depending on the method of answering the survey (online versus in-person) and the type of beverage to be restricted, the results vary. In general, all respondents indicated agreement on *keeping* the following beverages in the beverage vending machines: sports drinks, flavoured water, juice, iced tea, vitamin water and coffee beverages. All respondents shared stronger agreement in *removing* energy drinks with caffeine from the beverage vending machine. Of all respondents who completed the online survey and in-person survey who use city facilities, 48% indicated they agreed/strongly agreed to have pop and soft drinks removed. In comparison, 42% indicated they disagreed/strongly disagreed with the removal of pop and soft drinks from beverage vending machines. Figure 3 provides a summary of the responses for this question.

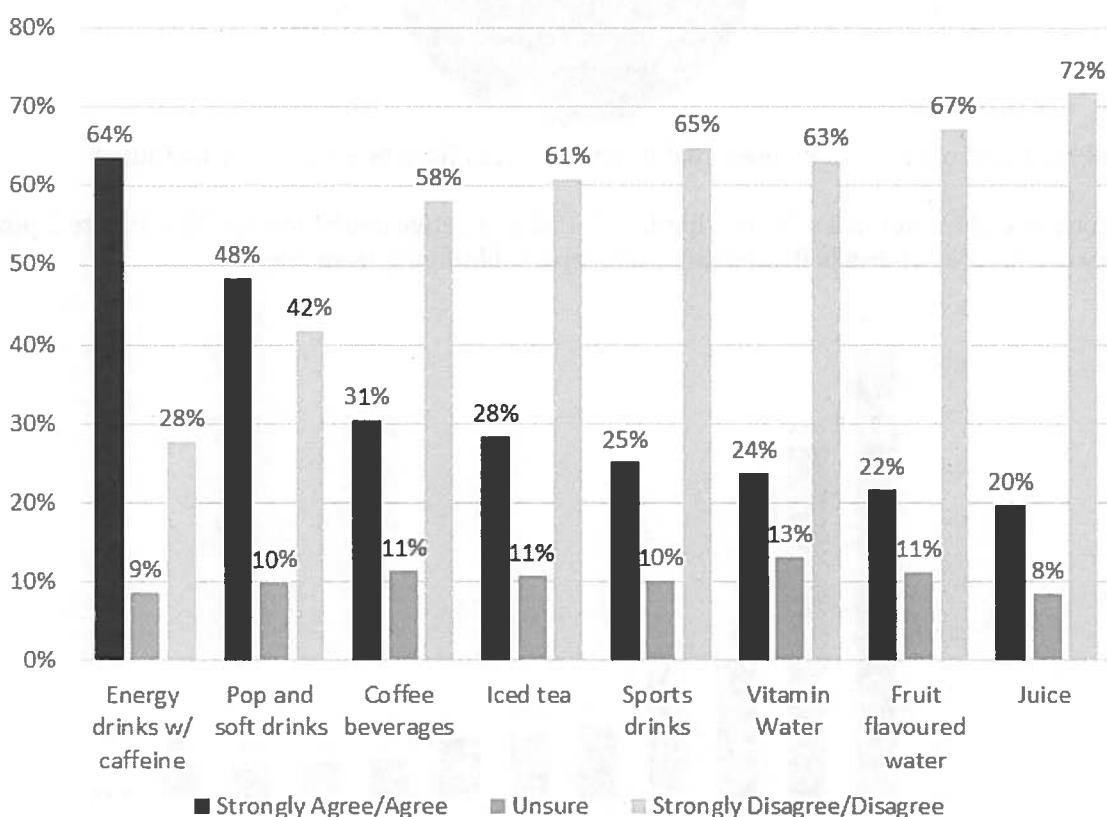


Figure 3. Facility users’ opinions related to restricting the sale of specific beverages from beverage vending machines.

**Bottled Water**

In 2008, London City Council discontinued the sale of single-use bottled water in the City Hall cafeteria, from city-owned or city administered concessions and in vending machines in public facilities where easy

access to municipal tap water exists. Civic Administration consulted with many community stakeholders, including the Health Unit, to inform the development and implementation of the bottled-water ban. The Health Unit provided public health considerations both for and against bottled water. Namely, the Health Unit expressed concerns about discontinuing the sale of bottled water in city-run facilities where bottled SSBs remain to be offered for sale. If bottled water is not available, and access to or use of municipal drinking water fountains is limited, then the public may opt for drinks with high levels of sugar, limited nutrition value and a high acid content. The Health Unit highlighted that both the sugar content and the acidity of SSBs can have negative impacts on overall health.

Therefore, public opinion was sought through this survey to determine whether or not the City should reconsider the single-use bottled water ban. Figures 4 and 5 outline facility users' opinions related to single-use bottled water being made available for sale in city-run facilities within beverage vending machines and the reasons why respondents think single-use bottled water should be made available.

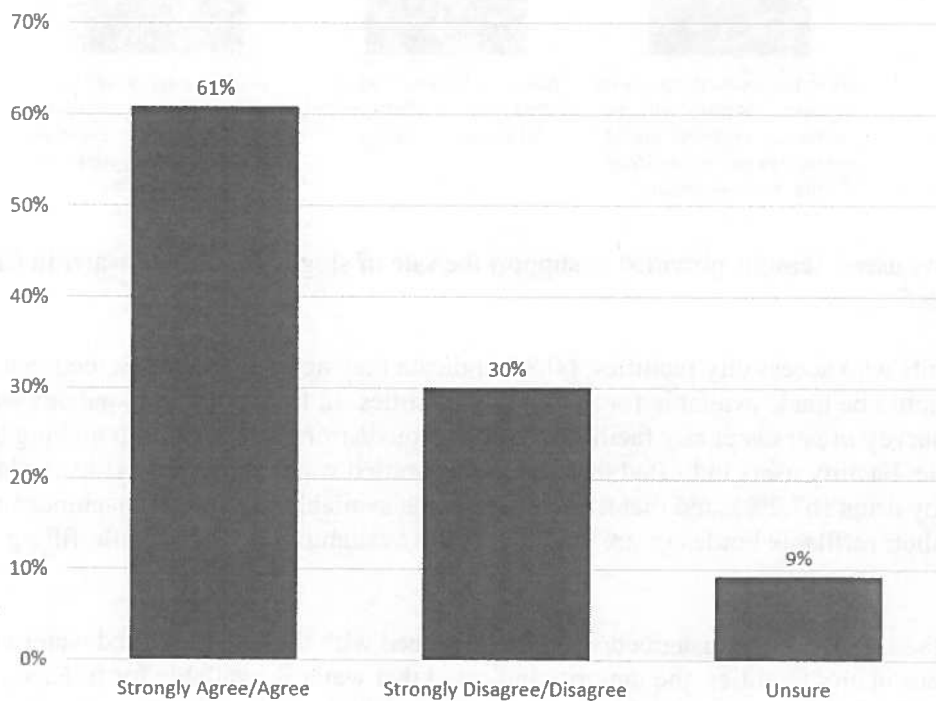


Figure 4. Facility users' opinions related to single-use bottled water being made available for sale in City of London facilities.

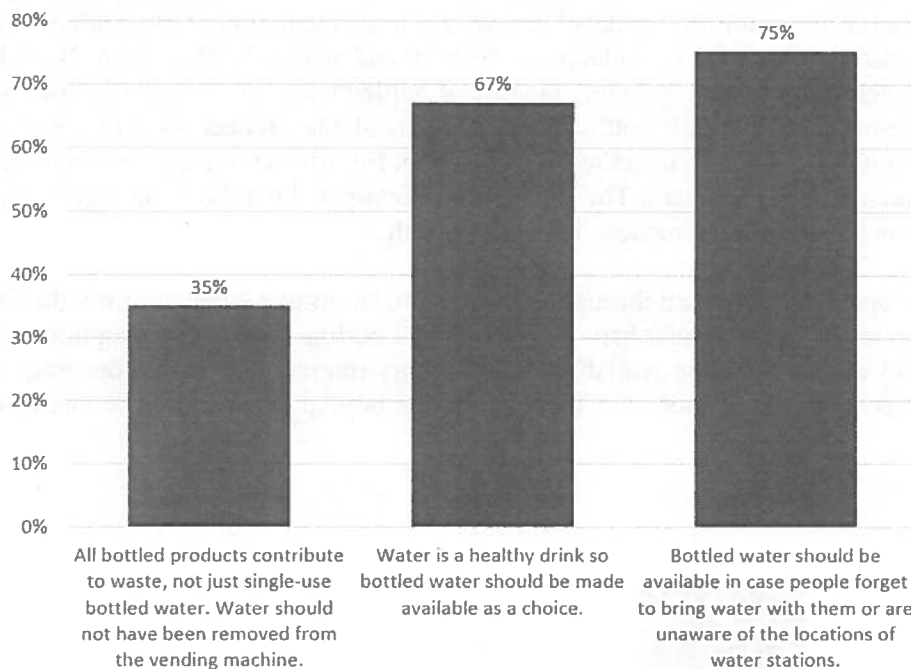


Figure 5. Facility users' reasons provided to support the sale of single-use bottled water in City of London facilities.

Of all respondents who access city facilities, 60.8% indicate they agreed/strongly agreed that single-use bottled water should be made available for sale in city facilities. In fact, of the respondents who completed the survey *in person* at city facilities, 62.7% agreed/strongly agreed with making bottled water available for sale. Facility users indicated that single-use bottled water should be made available because water is a healthy drink (67.2%), and that it should be made available in vending machines in case people forget to bring their refillable bottles or are unaware of the availability of water bottle-filling stations (75.3%).

Of the 30% of facility users that disagreed/strongly disagreed with the sale of bottled water in beverage vending machines in city facilities, the majority indicated that water is available for free from water fountains and bottle-filling stations (64.6%), and that all single-use bottles are an environmental waste issue (64.1%). Some of these facility users (35.1%) also indicated that since they bring their own water from home to the facility, they would not buy it from a beverage vending machine.

### Snack Vending and Candy Machines

While the purpose of the survey was focused on the issue of beverage vending, City staff solicited public input regarding the removal of snack vending and bulk candy vending machines. Facility users clearly disagreed with having snacks removed from the snack vending machines (66.3%); however, 58.1% agreed/strongly agreed with the removal of bulk candy vending machines from city-run facilities.

## **Evidence-Informed Recommendations: Behaviour and Policy Considerations**

A healthy food environment in city-run facilities provides healthy options that can improve dietary behaviour while making it easier for consumers to make the healthier choice for themselves and their families. The following evidence was collected from a literature search focused on policies affecting beverage vending machines and influencers of beverage choice behaviour from vending machines. Three databases were searched—Medline, PsysInfo and ERIC—highlighting the issues, interventions, settings and outcomes. Full search strategies, including a full list of terms used, are available from the authors.

### **Availability of Foods and Beverages in Vending Machines**

An individual's food and beverage selections are directly related to hunger level, rather than health outcome (Olstad, Goonewardene, McCargar & Raine, 2015). The environment in which food is provided can make it challenging for people to make healthy choices, depending on what types of food are available for consumption at these sites. Individuals who are influenced by environmental factors to unintentionally make less healthy choices may have a higher risk for becoming overweight or obese (Harrington, 2008; James, Thomas, Cavan & Kerr, 2004; Johnson, Bruemmer, Lund, Evens & Mar, 2009; Minaker, 2011; Shi, 2010). Municipally run facilities are priority settings for supporting healthy dietary behaviours among children, youth and families (Naylor, Olstad & Themen, 2015).

### ***Public Settings***

Vending machines have become a vehicle to increase the availability and convenience of unhealthy foods in public settings. Research findings show the availability of vending machines is positively correlated to vending machine use (Lawrence, Boyle, Carypo & Samuels, 2009; Park & Papadaki, 2016). The majority of food and beverage options in public settings are located in vending machines or canteens, but the opportunity to use such settings to promote and provide healthier dietary choices is often forgotten (Irby, Drury-Brown & Skelton, 2014; Olstad et al., 2015; Thomas & Irwin, 2010). Studies show that parents who frequent municipally run facilities, such as recreation centres, use vending machines to purchase foods and beverages mainly for their children and themselves (Thomas & Irwin, 2010). The majority of foods and beverages purchased from such venues are SSBs and high-energy snack foods. Many parents visiting recreational centres with their children also rely on snacks and beverages purchased from vending machines to replace meals (Irby et al., 2014; Olstad et al., 2015; Thomas & Irwin, 2010). Ongoing exposure and easy access to vending machines containing unhealthy foods and beverages influences dietary choices and makes unhealthy eating options more prevalent in these environments (Kelly, 2010; Shimotsu, French, Gerlach & Hannan, 2007).

### ***School Environments***

Students in an educational environment can easily access unhealthy foods and beverages from vending machines. The majority of snacks sold in vending machines are high in sugar, fat and saturated fats, and vended beverages are high in sugar (Ermetici et al., 2016). Findings from Park and Papadaki (2016) confirm that the accessibility and use of vending machines were positively associated with snacks and soft drinks consumed by students in school settings. Minaker (2011) explains that the presence of vending machines encourages children to adopt the habit of snacking and consuming SSBs. Furthermore, accessibility of vending machines also encourages students to bring similar unhealthy snacks and

beverages from home (Minaker, 2011). Fostering an unhealthy food environment in one location encourages equally unhealthy food environments elsewhere.

A systematic review conducted by Matthews and Horacek (2015) reported that inaccessibility of vending machines to children, adolescents and adults reduced their purchasing of vended snacks and beverages. The food environment has a strong influence on individuals' dietary habits; therefore, if healthy snacks and beverage choices are offered, individuals will improve their dietary choices. As shown in studies at public transportation sites and workplaces, it is difficult for individuals to make healthy choices when healthy products are not accessible in vending machines (Escoto et al., 2010; French et al., 2010; Kelly et al., 2010; Matthews & Horacek, 2015). It is clear that increasing the availability of healthier choices in vending machines can strongly influence individuals' food and beverage purchasing in recreational settings (Irby et al., 2014; Olstad et al., 2015; Thomas & Irwin, 2010), and, by extension, other municipally run facilities.

#### **Nutrition Information (Food Labels) and Promotions (Advertisements and Logos)**

Food is often categorized in the literature as healthy or unhealthy based on the type of food (e.g., milk, vegetables/fruit), its nutritional content (e.g., sugar, sodium), or eating behaviours (e.g., moderation, balanced, variety) (Matthews & Horacek, 2015). Providing children, youth and families with information about healthy eating, along with the rationale for changes to the food environment in municipally run facilities, is necessary to modify their beliefs about the consumption of a healthy diet. For instance, Kocken (2015) demonstrated that factors in the school food environment, such as food labelling or product advertisements, influenced students' consumption of SSBs, energy-dense foods, fruits and vegetables. A similar study by Wouters (2010) revealed that lower nutrition education was directly associated with higher consumption of soft drinks found in school vending machines. A systematic review reported that brand logos and product advertisements are positively associated with consumers' purchasing decisions, specifically of unhealthy foods (e.g., salty snacks, candy and sugar-sweetened beverages) (Matthews & Horacek, 2015). Furthermore, nutrition labels and content claims had a direct impact on product knowledge and consumption (Matthews & Horacek, 2015). Current research confirmed that the use of educational posters was successful in promoting healthy, nutrient-dense products in vending machines (Ermetici et al., 2016).

A major contributor to excessive energy intake is the increased consumption of SSBs commonly purchased from vending machines (Bergen & Yeh, 2006). In addition to the poor nutritional content of beverages sold in vending machines, the new mega-sizing of beverages is a phenomenon that has increased the amount of SSBs consumed. A study by Bergen and Yeh (2006) indicated the addition of energy-content labelling and motivational posters on vending machines was an effective strategy to influence beverage selections purchased from vending machines. As nutrition recommendations and guidelines are constantly evolving, it is difficult for individuals to remain informed about the most current information. Therefore, studies suggest that it is more worthwhile for policy makers to investigate the healthfulness of vended products, such as nutritional content and portion sizes, before offering them to the public (Mathews & Horacek, 2015).



### **Prices of Healthy versus Unhealthy Foods and Beverages**

Food environments and the growing accessibility of lower-priced, calorie-dense foods and beverages are key contributors to the obesity epidemic (Bergen & Yeh, 2006). Studies show that nutrition-dense products are usually perceived as more expensive than calorie-dense products, which seem to have a strong influence on individuals' dietary choices (Matthews & Horacek, 2015). A study by French and colleagues (2010) showed lowering prices of healthy snacks in vending machines increased the sales volumes of healthy vended products at bus garages, similar to other studies conducted at schools and worksite settings. Schultz (2010) reports that multiple studies across the United States demonstrated continued revenue generation after imposing changes to the price of healthy vended products, and in some cases increased profit was seen with increased accessibility of healthy foods and beverages in vending machines. Kocken and colleagues (2012) found that a 25 to 50% price reduction of healthy vended products is the most effective strategy to increase the consumption of healthy foods and beverages, such as bottled water. Similarly, in a systematic review conducted by Grech and Iman-Farinelli (2015), price reductions on healthier options were successful in changing the purchases of adults and children, and produced a significant positive change in the purchase of the discounted items when the incentive was greater than 10%. Alternatively, Block and colleagues (2010) found increasing the price of soft drinks resulted in decreased sales of these products. Grech and Iman-Farinelli (2015) concluded that price incentives are an effective method for changing the buying practices of vending machine consumers.

### **Pouring Rights Contracts, Sponsorship Agreements and Revenue**

Pouring rights contracts are common between schools, municipalities or other agencies, and soft drink companies, where funding is provided to these institutions in return for beverage companies being granted permission to sell and promote their beverage products. Most of the evidence focuses on pouring rights within the school setting.

Pouring rights, and being exposed to unhealthy options and beverage industry marketing, are most contentious in schools, because this is a learning environment where children and youth spend the majority of their day. In Ontario, approximately all secondary schools and almost half of all elementary schools have vending machines (Minaker et al., 2011). The food and beverage industry provides incentives for schools to use highly accessible vending machines in promoting unhealthy beverage products, such as soft drinks, sports drinks and vitamin water. The food and beverage industry takes advantage of less fortunate schools where funding is needed, and schools in neighbourhoods where families have a lower socioeconomic status are more likely to permit sponsorship and promotion (Johnston, Delva & O'Malley, 2007). The result of pouring rights in these neighbourhood schools is the consumption of low-nutrient, energy-dense foods and beverages during children's developmental years. Additionally, with greater exposure in a school environment to food industry logos, colours and other marketing efforts, children are more likely to develop "brand" and "taste" preferences, which may lead to the development of poor dietary habits and impact their health during adulthood (Johnston et al., 2007; Shi, 2010).

Increasing the availability of healthier choices in vending machines can strongly influence individuals' food and beverage purchasing in recreational settings (Irby et al., 2014; Olstad et al., 2015; Thomas & Irwin, 2010). Operators in these settings are often resistant to increasing healthy food and beverage options due to the preconceived notion that healthy foods are not revenue-generating (Olstad et al., 2015).

A recent study by Olstad and colleagues (2015) revealed the number of sales and revenue generated per customer was maintained when healthier vending machine products were introduced. This demonstrates the potential for mutual agreement and partnership benefits between public health and community settings to increase the accessibility of healthier vending machine products (Olstad et al., 2015). Research recommends public health officials review the strategies used by the food and beverage industry to make unhealthy food consumption the normative action in most environments. These strategies may assist operators at municipal facilities to increase sales of healthy products in vending machines (Olstad et al., 2015).

While pouring rights increase access to SSBs, the negative health impact of SSB consumption can be mitigated with wellness policies and nutrition guidelines to influence healthier choices, and is associated with lower SSB availability (Terry-McElrath, O'Malley & Johnston, 2011). The development of targeted nutrition guidelines for municipally run venues results in reduced SSB supplier involvement in choices offered (Terry-McElrath et al., 2011).

### **Increased Availability of Water**

Childhood obesity prevention strategies require environmental changes that support children in making healthy choices. Whether at schools or in recreational/sports settings, children and youth engage in physical activities throughout their day. Physical activity triggers thirst and may increase children's risk of dehydration (Chen & Wang, 2016). Studies have proven that the best rehydration choice in any sports venue is water, and schools are excellent at increasing the accessibility of water fountains to prevent adverse dehydration (Chen & Wang, 2016). However, the high availability of beverage vending machines containing SSBs may increase competition for water consumption and offset energy expenditure from physical activity (Chen & Wang, 2016).

A recent study by Chen and Wang (2016) recommended the complete removal of vending machines containing SSBs from schools and the installation of more water fountains. Jones, Gonzalez and Frongillo (2009) found similar results. These researchers noted that children are three times more likely to purchase SSBs if they are available, regardless of whether healthy drink choices are available. If the availability of SSBs was eliminated, students would purchase and consume fewer SSBs. Providing alternatives to SSBs is not as effective as completely eliminating their availability (Jones, Gonzalez & Frongillo, 2009).

Aside from the availability of SSBs, children's decisions to use water fountains were dependent on water-quality factors, such as taste, temperature and colour. The concern with water quality found in water fountains was later addressed by suggesting the substitution of SSBs in vending machines with single-use bottled water. A number of studies indicate that allowing bottled water and other healthy beverages in vending machines in schools and recreation facilities encourages patrons to purchase healthier options, with preference for water (Ermetici et al., 2016; Irby et al., 2014; Johnston, Delva & O'Malley, 2007; Olstad et al., 2015; Park & Papadaki, 2016; Wiecha, Finkelstein, Troped, Fagala & Peterson, 2006; Wordell, 2012).

A summary of key considerations contained within the evidence is available as Appendix C.

## **Selected Lessons from the Field: What have other municipalities done?**

Recommendations for comprehensive, district-wide policy in coordination with professional education, community-identified tools and technical assistance can translate into sustained, healthy food environments (Mozaffarian et al., 2016). Cradock and colleagues recommend policies that promote community-wide changes to make healthier beverage options more accessible on city-owned properties.

The Ontario Society of Nutrition Professionals in Public Health (OSNPPH) has developed a list of essential elements of a healthy recreation food environment (OSNPPH, 2016), which has been adapted and utilized at a number of municipally run facilities in Ontario and possibly beyond. Below are some examples of municipalities that have implemented changes to the food environment in their municipally run facilities.

### ***Blandford-Blenheim (Oxford County), Ontario***

This collaborative project with the Blandford-Blenheim arena in rural Oxford County (Oxford County Public Health, 2016) demonstrated that a healthier food environment is financially feasible and can be achieved by implementing a number of different actions, such as: strategic product purchasing and menu planning to increase availability of healthy foods and beverages; decreasing availability of unhealthy foods and beverages; ensuring competitive pricing of healthier foods and beverages; and effectively using product placement and promotional strategies.

The Blandford-Blenheim recreation facility experienced an increase in revenue and success in implementing the recommendations of the healthier recreation concession project.

### ***Kingston, Frontenac and Lennox & Addington (KFL&A) Public Health***

The KFL&A Recreation Centre Food and Beverage Survey Report (KFL&A, n.d.) provided staff at that agency with information pertaining to: recreation centre patrons' food and beverage purchasing behaviours; patrons' perceptions of food and beverages available in recreation facilities; and patron acceptance of healthier alternatives that could be sold in recreation centres. This information helped KFL&A staff to understand user opinions, anticipate barriers and identify opportunities to change the food environment.

The results of their survey indicate public support for increasing the availability of healthy food and beverages in public recreation centres. The results also identify many opportunities to improve the food environment to meet patron demands along with the potential to influence the health of recreation centre patrons.

KFL&A Public Health identify five recommendations that support recreation centres in improving their food environments: engagement with key stakeholders, including municipal recreation departments, recreation centre management, food service providers and vending operators; employment of a phased approach to increase the availability of healthy choices in recreation facilities; addressing identified patron preferences; providing promotional tools to promote healthy choices; and advocating for policies that support healthy food and nutrition environments in recreation centres.

***City of Toronto: Parks, Forestry and Recreation***

In 2011, Toronto's City Council started a process to change the food environment in Toronto recreation settings, which was supported by political leadership and collaboration between the health department and the city. Their process included voluntary participation in a project to offer and promote healthier food and beverage choices at concessions: a request for proposal (RFP) process for cold beverage vending machine contracts that included a requirement for 50% healthier beverage choices; an RFP for a new snack vending machine contract that included a requirement for 20% healthier snack choices across the city (with a progression to 50% healthier snack choices); and a 100% healthy vending choices pilot project in twenty recreation settings in Toronto.

Though a number of barriers to achieving healthy food environments in recreation settings were cited, the Toronto City Council adopted the RFP for the operation of beverage services for cold drink vending machines and pouring within Parks and Recreation facility locations. For more information about the City of Toronto's cold beverage vending report, please review their staff report (City of Toronto, 2011).

***Lucan Biddulph (Middlesex County), Ontario***

Changes to the food environment at a recreation facility in Lucan Biddulph, Ontario, occurred over three years through a process of change that focused on: gaining greater control over municipally run facilities; education of council, staff and citizens; taking specific action to affect the food environment within this setting; and working with suppliers to provide improved and competitive pricing.

Results in this municipality included: elimination of advertising of non-nutritional foods; removal of candy machines, a slushy machine and a nacho machine; reduction in the number of beverage vending machines from three to one; reduction in the size of selected snack and beverage portions available; increases in the price of pop to offset the lower price of single-use bottled water; implementation of a water bottle-filling station in a common location in recreation facilities; and the addition of milk, chocolate milk, fruits and eggs to the concession stand menu. For additional information about this project, please contact the author of this report.

***King County, Washington, USA***

In King County, one local board of health developed a policy approach for healthy food access through vending machine guidelines, and reviewed its impact and approach. They found that the guidelines and recommendations provided "policy guidance" in settings where the board of health does not have any regulatory authority, and facilitated the opportunity to create a healthy beverage environment within municipally run settings frequented by children, youth and families. For more information about this approach, please review the work by Quinn and colleagues (2015).

***Boston, Massachusetts, USA***

This project implemented and evaluated the impact of the Healthy Beverage Executive Order for all city agencies. The project provided policies to support access to healthy beverages on city-owned properties to make the healthier choice the easier one. For more information about this approach, please review the work by Cradock and colleagues (2015).

Additional examples from other municipalities can be found in Appendix D.

## Policy Options for Municipally Run Facilities

In Australia, Miller and colleagues (2014) implemented a policy approach called *Better Choice*, with the goal of improving the food and drink supply in public sector health facilities. This program increased supply and promotion of healthy foods and drinks and decreased supply and promotion of energy-dense, nutrient-poor choices in all food supply areas of municipally run facilities. *Better Choice* is one example of the implementation of a public policy approach to improving the food and drink supply in complex, real-world settings. This is also an effective way to support healthy dietary behaviours and body weights among children (Naylor et al., 2015).

### Policy Options for the City of London

Targeting the food environment in schools, workplaces, recreation facilities, community centres and other locations where children, youth and families live, work, play and learn is an important strategy that has gained considerable appeal in the public health community over the past several years (Garner et al., 2014). Health promotion activities are central to the mission of the Health Unit. Consequently, this report outlines policy options which have an opportunity to enhance the food environment to improve health outcomes. The following policy options are informed by the survey results, the review of the evidence and lessons learned from other municipalities. Whichever policy option is selected and implemented, the Health Unit recommends that it be supported with a comprehensive implementation plan, including a communication campaign to maximize reach and impact.

### *Snack Vending, Bulk Candy Vending and Concession Stands*

While the scope of the review was limited to beverage vending, there was an opportunity to gauge public support for changes to snack and bulk candy vending machines that are available in most city-run facilities. Given the level of public support (58.1% agree/strongly agree), the Health Unit recommends that the bulk candy vending machines be removed. The removal of these machines will reduce the distribution of bulk candy—candy that is nutrient-poor and very high in sugar (e.g., gumballs, hard candies, chocolate snacks, etc.).

The results of the survey related to snacks (e.g., gum, chips, chocolate bars, peanuts, etc.) indicate that the snack food environment requires further review and discussion prior to making changes to snack vending machines. There was clear disagreement (66.3% of respondents who access city facilities) to remove snack vending machines from city facilities. However, a healthy food environment in city-run facilities would have a significant, positive impact on the health and behaviour of children, youth and families in our community. A review of the food environment within city facilities, specifically addressing snack food options within vending machines and concession stands, could be of benefit. The report highlights the unique role that municipal governments and health units can play in influencing the food environment to make the healthy choice the easy choice; therefore, the Health Unit recommends continued collaboration with City staff.

### *Beverage Vending Options*

#### *Policy Option #1: Remove all beverage vending machines*

This option meets Health Unit recommendations to eliminate the distribution of SSBs in city-run facilities and encourages facility users to drink tap water from fountains and at bottle-filling stations. The removal

of beverage vending machines will help to reduce consumer confusion around those SSBs that are marketed by the beverage industry as “healthier” beverages (“health washed”), because they will no longer be available for sale. From a health perspective, sports drinks, vitamin water and juices also contribute to the negative health effects of too much sugar in the diet, and should not be labelled “healthy” or “healthier” compared to soft drinks and energy drinks. The drink of choice for hydration and health is plain water. Since all single-use bottles generate waste, the removal of vending would have a positive impact on reducing the City’s generation of plastic bottle waste.

The key challenge with this policy option relates to public perception about consumer choice. Removing all vending machines may be interpreted by some facility users as removing choices from parents, and leaves no drink options available except for water fountains, water bottle filling stations and concession stands (when available). However, 82.5% of facility users are already bringing beverages of their choice from home to city facilities. The removal of beverage vending machines would send a clear message that all sugary drinks are known negatively to impact the health of its facility users and that facility users are encouraged to choose water from water fountains and bottle filling stations to satisfy thirst.

Removing all beverage vending machines also results in a small loss of revenue. However, if the City of London stops receiving funds from the sale of beverages that increase the risk of unhealthy weights and other chronic diseases, this aligns with the City of London’s strategic plan to work with the Health Unit to promote and protect the health of the community. This also aligns with other City-supported community initiatives that are currently promoting the health benefits of drinking water and reducing the consumption of SSBs, such as the Healthy Kids Community Challenge. Decreased distribution of SSBs by the City of London would demonstrate leadership in promoting health and creating healthy environments for families from London and surrounding communities who are accessing programs and services.

*Policy Option #2: Beverage vending machines with single-use and reusable bottled water only*

This option enables the City of London to continue to generate revenue through beverage vending sales, while promoting the consumption of water—the healthiest beverage option. The majority of facility users (60.8%) would like single-use bottled water to be made available for sale in city facilities, both because it is a healthy choice and for those instances when people forget their own water or are unaware of the availability of water fountains/water bottle filling stations.

The environmental impact of adding single-use bottled water to beverage vending machines needs to be considered. The purchase of bottled water may increase, generating additional plastic bottle waste, contrary to the intent behind the bottled-water ban instituted in 2008. However, it is important to note that all bottled beverages for sale in beverage vending machines generate waste, and many facility users reported bringing their own water from home in a refillable bottle (83.1%). Therefore, even with the sale of bottled water in beverage vending machines, the net volume of plastic bottle waste may in fact decrease because of the removal of all other SSBs. The concern about waste could further be mitigated with increased availability of reusable water bottles at city facilities, and by exploring whether or not water in reusable water bottles could be sold from the vending machines.

Last, the increased availability of bottled water may call into question the safety of the municipal water supply by the public. It would be necessary to mitigate this potential misperception with a strong educational campaign that promotes water fountains and bottle-filling stations within city facilities.

Overall, there are long-term positive health impacts by including only single-use and reusable bottled water in the vending machines, and it is supported strongly by the evidence as a means to increase awareness about the health risks associated with consumption of SSBs and the health benefits of drinking water. While the bottled-water issue is complex, this policy option should be considered.

*Policy Option #3a: Remove all pop and energy drinks from beverage vending machines and add single-use and reusable bottled water at discounted prices. Decrease serving sizes of remaining SSBs and increase the price of SSBs*

This policy option calls for the removal of pop and energy drinks from beverage vending machines. The removal of pop and soft drinks is supported by facility users, with 48% indicating that they agreed/strongly agreed to have them removed, versus only 42% who disagreed/strongly disagreed. Respondents shared even stronger agreement in removing energy drinks with caffeine (63.5%). The removal of these particular SSBs sends a clear message to children, youth and families that these drinks are unhealthy and should not be distributed at city facilities. At the same time, the addition of low-cost, single-use and reusable bottled water to vending machines will help to reinforce the fact that water is the healthiest drink choice. The sale of SSBs in smaller-sized bottles at higher cost would help to decrease sugar consumption and reinforces healthy-eating messaging that SSBs should be consumed sparingly.

The literature recommends providing water at a lower cost compared to SSBs in the beverage vending machine (French et al., 2010; Grech & Iman-Farinelli, 2015; Kocken et al., 2010; Schultz, 2012). Water should be at most half the price of SSBs. Not only would a less expensive option be appealing to the public, but returning water to the beverage vending machine is supported by the survey results.

This policy option, however, is not without its own challenges. Because there is no agreed-upon definition by health experts of the term “healthy” as it relates to vending machine options, it will be difficult to decide and consistently implement changes to this food environment. For example, if vitamin water and sports drinks are kept in the beverage vending machines, SSBs will still be readily available for consumption. The removal of some SSBs and leaving others for sale is sending an incorrect message about the health benefits of sports drinks, vitamin water and other SSBs. This approach encourages “health washing” of so-called “healthier” beverage vending machine choices.

This policy option has some identified challenges from a health perspective and has been identified in the evidence as potentially problematic; however, there are benefits as it relates to facility users’ freedom of choice, portion control and public education around the health risks associated with pop and energy drinks. In addition, it may be more appealing from a business perspective, and is in line with the results from the survey. Further exploration of the unintended consequences of “health washing” and how this policy option would be monitored would be required if this direction were chosen.

*Policy Option #3b: Remove all pop and energy drinks from beverage vending machines and decrease serving sizes of remaining beverages*

The sale of single-use and reusable bottled water within vending machines is complex, as outlined in Policy Option #2; therefore, this policy option may yield some potential positive health impacts, while eliminating both the benefits and challenges related to the sale of bottled water. Overall, the potential positive health impact of this policy option is lower than Option #3a, because water, as the healthiest choice, is not being added; however, it may be worth consideration as an intermediate action that could be

taken by Civic Administration. This policy option allows for a more robust review of the bottled water ban, while implementing some changes that will improve the food environment at city facilities.

*Policy Option #4: Add single-use bottled water to beverage vending machines, keep all other SSBs available for sale and price SSBs higher than water*

In reality, water is the healthiest beverage option in beverage vending machines (that do not also sell lower-fat white milk) and should be made available to those who do not have a refillable water bottle available or who choose to refrain from drinking directly out of fountains. Adding water back into the beverage vending machines provides choice to the consumer while generating additional revenue for the City of London.

As recommended in the literature, water should be available at most half the price of SSBs in beverage vending machines (French et al., 2010; Grech & Iman-Farinelli, 2015; Kocken et al., 2010; Schultz, 2012). A less expensive option is appealing to the public and the availability of water in beverage vending machines is supported by the survey results.

The environmental impact of adding single-use bottled water to beverage vending machines needs to be considered. The purchase of bottled water may increase, generating additional plastic bottle waste; however, it is important to note that all bottled beverages for sale in beverage vending machines generate waste, and many facility users reported bringing their own water from home in a refillable bottle (83.1%). Therefore, even with the addition of bottled water to beverage vending machines, the net volume of plastic bottle waste may in fact balance, as those who had previously purchased SSBs switch to the purchase of bottled water. This potential consequence could further be mitigated by increased availability of reusable water bottles at city facilities, and the exploration of whether or not water in reusable water bottles could be sold from the vending machines.

Last, the increased availability of bottled water may call into question the safety of the municipal water supply by the public. It would be necessary to mitigate this potential misperception with a strong educational campaign that promotes water fountains and bottle-filling stations within city facilities. Overall, long-term positive health impacts can be achieved by adding single-use bottled water into the vending options, which would aid in shifting the culture and perception of healthy drinks in this food environment. This policy option is worth consideration given the results of the survey and the potential health benefits.

*Policy Option #5: Status quo—beverage options remain the same*

While this policy option is the easiest to implement and would yield no loss in revenue and no increase in cost to the City of London, it does nothing to create a healthier food environment within city-run facilities. Further, the survey results indicate that facility users are ready for some changes to be made to drink options available within beverage vending machines. Failure to implement any changes would be ill-advised, especially when steps were taken to solicit public input and the documented benefits associated with municipal policy change are significant.



## Recommended Policy Option: Remove All Beverage Vending Machines

After careful consideration of the survey results, the review of the evidence, lessons learned from other municipalities and the five policy options, the Middlesex-London Health Unit recommends that the City of London remove all beverage vending machines from city-run facilities (i.e., Policy Option #1). A summary of the rationale for why this policy option is the preferred approach for the City of London is provided in Table 2.

*Table 2. Summary Rationale for the Removal of All Beverage Vending Machines within City of London Facilities*

| <b>Rationale for the Removal of Beverage Vending Machines</b>  |
|--|
| <ul style="list-style-type: none"> <li>• The majority of London facility users (82.5%) bring beverages of their choice from home.</li> <li>• SSBs are the single largest source of sugar in the diet.</li> <li>• Eliminating the sale of all sugary drinks from vending machines, including sports drinks, vitamin water and juices, sends a consistent message that all sugary drinks contribute to the negative health effects of too much sugar in the diet. This approach avoids “health washing,” which labels some SSBs as “healthier” than others.</li> <li>• Water is the best choice to satisfy thirst, to stay hydrated and to feel energetic and alert.</li> <li>• Plain tap water is safe and easily accessible to children and adults, both at home and in city-run facilities from water fountains and bottle-filling stations.</li> <li>• When children are encouraged to drink water at a young age, they are more likely to drink water later in life.</li> <li>• Children with high intakes of SSBs are more likely to be overweight or obese. Each additional SSB consumed per day increases a child’s risk of becoming obese by 60%.</li> <li>• The sugar in SSBs promotes bacterial growth and the acid in carbonated drinks weakens teeth, which can lead to cavities.</li> <li>• The removal of beverage vending machines will reduce the number of plastic bottles that find their way into recycling and waste systems. This approach supports the City’s current ban on the sale of bottled water.</li> <li>• Decreased distribution of SSBs by the City of London demonstrates leadership in promoting health and creating healthy environments for those families who access programs and services.</li> </ul> |

Sugar consumption is a major public health concern, with SSBs being the single largest contributor of sugar to children’s diets (Langlois & Garriguet, 2011). Excessive intake of sugar has been linked to obesity, type 2 diabetes, cardiovascular disease, dental caries, metabolic syndrome and a lower intake of nutrient dense beverages, such as milk (Standing Senate Committee, 2016; WHO, 2015). In children, a higher intake of SSBs increases the risk of overweight or obesity by 55% (Te Morenga, Mallard & Mann, 2013). Just over 25% of Ontario youth aged 12–17 and almost 64% of Middlesex-London adults self-report being overweight or obese (CCHS, 2014).

In addition to physical health, dietary choices impact mental health, cognitive function, the ability to focus and sleep patterns. The evidence shows that healthy children perform better academically, have better

attendance and behaviour at school, and enjoy improved concentration, memory and mood (CDC, 2014). Properly nourished children are more likely to grow and develop into healthy, active adults (Ontario Ministry of Child and Youth Services, n.d.).

Food and drinks sold in recreation centres, schools, variety stores and workplaces have a significant influence on diet and health (National Collaborating Centre for Environmental Health (NCCEH), 2014). Individuals who are influenced by environmental factors to make less healthy choices may have a higher risk for becoming overweight or obese (Harrington, 2008; James, Thomas, Cavan & Kerr, 2004; Johnson, Bruemmer, Lund, Evens & Mar, 2009; Minaker, 2011; Shi, 2010). Improvements to the food environment are a priority for reducing the prevalence of unhealthy weights and improving health. Municipally run facilities, specifically, are priority settings for supporting healthy dietary behaviours among children, youth and families (Naylor, Olstad & Themen, 2015). Municipally run facilities often serve as community hubs and have the ability to reach and impact a broad cross-section of the population, including higher-need individuals and families. These facilities have the opportunity to help set the foundation for lifelong healthy lifestyles.

In school environments, accessibility of vending machines encourages students to bring similar unhealthy snacks and beverages from home (Minaker, 2011). Fostering an unhealthy food environment in one location encourages equally unhealthy food environments elsewhere. This relationship likely translates to municipally run-facilities, whereby accessibility of vending machines in city facilities also promotes unhealthy food choices in other settings.

Removing all beverage vending machines is recommended from a health perspective, rather than increasing the proportion of “healthier” beverages, the approach taken by other select municipalities. Children are more likely to report purchasing SSBs if they are available, regardless of whether healthy drink choices are available or not (Chen & Wang, 2016; Jones, Gonzalez & Frongillo, 2009). Providing alternatives to SSBs, including water, is not as effective as completely eliminating their availability (Chen & Wang, 2016; Jones, Gonzalez & Frongillo, 2009). As such, researchers recommend the complete removal of vending machines containing SSBs and the installation of water fountains (Chen & Wang, 2016; Jones, Gonzalez & Frongillo, 2009). This change in support of healthy environments for children has already begun in the City of London, with the removal of beverage vending machines from most, if not all, local elementary schools.

There are concerns with increasing the proportion of “healthier” beverages in vending machines, instead of removing all beverage vending machines. Classifying certain beverages as healthier because they contain less sugar than beverages with the highest sugar content, typically soft drinks, is misleading. This practice, often used in beverage marketing by the beverage industry, encourages “health washing” of certain beverages, leading to the consumer misconception that these beverages are healthy. From a health perspective, sports drinks, vitamin water and juices are still SSBs, and, like all SSBs, contribute to the negative health effects of too much sugar in the diet. The beverage of choice for hydration and health is plain water.

Over 60% of City of London facility users surveyed supported the sale of single-use bottled water in city facilities. When facility users decide to purchase a beverage from a vending machine, they want the choice to purchase a healthy option (i.e., plain water) instead of an SSB. From a health perspective, water is the ideal beverage choice. However, from an environmental perspective, single-use water bottles

contribute to environmental concerns, which previously led the City of London to discontinue the sale of single-use water bottles from public facility vending machines, replacing it with easy access to municipal tap water (e.g., water fountains). All single-use bottles, however, require fossil fuels for their production and transport, and contribute to plastic bottle waste, regardless of the type of beverage they contain. The total removal of beverage vending machines would have a positive impact from both a health and an environmental perspective.

Removing all beverage vending machines may be interpreted by some facility users as removing choices from parents and leaving no beverage options available except for municipal water sources (e.g., water fountains) and concession stands (when available). However, 82.5% of facility users are already bringing beverages of their choice from home to city facilities. The beverages most often reported to be taken to these facilities included water in a refillable bottle, coffee, or tea. This common practice of facility users bringing beverages from home offers families the opportunity to make their own beverage choices, supports the health of their families and is more cost-effective than paying premium vending machine prices.

As stated in the current Strategic Plan, the City of London is committed to working with the Health Unit to promote and protect the health of the community. Decreased distribution and sale of SSBs by the City of London would demonstrate leadership in promoting health and creating healthy environments for families from London and the surrounding communities who are accessing programs and services. This also aligns with other City-supported community initiatives that are currently promoting the health benefits of drinking water and reducing the consumption of SSBs, such as the Healthy Kids Community Challenge.

## Next Steps and Conclusions

This report outlined the results of the public input survey, summarized a review of the literature and an environmental scan, and provided policy options for consideration by Civic Administration on how best to make improvements to the food environment in city-run facilities. After careful consideration of the policy options, the Health Unit recommends that the City of London remove all beverage vending machines and bulk candy vending machines from city-run facilities. It is recommended that a more comprehensive review of the snack food environment be initiated to explore snack food vending and concessions to identify opportunities to further improve the food environment in these important community hubs.

The City of London prides itself on being a leader in public service collaboration and innovation, and has identified health promotion and protection as a strategic priority. This report clearly outlines the potential long-term health benefits that could be achieved by eliminating the distribution of SSBs through beverage vending machines. Appendix E provides additional information, in a question-and-answer format, about the health risks associated with the consumption of SSBs and the benefits of reducing the availability of SSBs in publicly funded settings.

The survey results show the majority of patrons of city facilities are already bringing their own beverages from home, most often water in a refillable container. However, the results also show that there is support

for the continuation of the sale of certain sugary drinks, including sports drinks, vitamin waters and juices. This indicates the misconception that some sugary drinks are needed for hydration during physical activity, or that these are “healthier” choices. This is an opportune time for the Health Unit to work collaboratively with the Healthy Kids Community Challenge initiative and the City of London to engage in public education activities that: promote municipal water as the beverage of choice; address the “health washing” of various SSBs; and make known the health risks of excessive sugar consumption. There is a lack of awareness regarding the health risks associated with the consumption of all SSBs, and a lack of consumer awareness regarding beverage industry marketing practices. Providing children, youth and families with information about healthy eating, along with the rationale for changes to the food environment in city-run facilities, is necessary to modify beliefs about what constitutes a healthy diet.

When implementing health promotion policies, like making changes to the food environment in community hubs such as city-run facilities, the impact of policy changes is significantly enhanced when supported by a comprehensive communication strategy. In 2017, the Health Unit will work collaboratively with the City of London’s Healthy Kids Community Challenge initiative and the City’s Parks and Recreation Department to implement an education campaign in and around arenas, aquatic centres and community centres to make known the health risks associated with the consumption of SSBs and the benefits of water. The Health Unit is also committed to working with the Healthy Kids Community Challenge partners to support the upcoming 2017 theme of increasing vegetable and fruit intake because of the importance of the food environment as a whole.

City facilities, like arenas, recreation centres and City Hall, are vital hubs within our community and they can positively impact the health and wellness of children, youth and families. These settings are ideal for the promotion of a healthy food environment, and since food and beverages sold in recreation centres and workplaces have been recognized as having a significant influence on diet and health (NCCEH, 2014), improvements to the food environment remain a priority for the Health Unit. The Health Unit is committed to continuing its work in collaboration with the City of London, now and into the future.

## References

Bergen, D., & Yeh, M. C. (2006). Effects of energy-content labels and motivational posters on sales of sugar-sweetened beverages: Stimulating sales of diet drinks among adults study. *Journal of the American Dietetic Association*, 106(11), 1866–69.

Birch L., Savage J. S., & Ventura, A. (2007). Influences on the development of children's eating behaviours: from infancy to adolescence. *Canadian Journal of Dietitian Practice Research*. 68, 1–56.

Brambila-Macias, J., Shankar, B., Capacci, S., Mazzocchi, M., Perez-Cueto, F. J., Verbeke, W., & Traill, W.B. (2011). Policy interventions to promote healthy eating: A review of what works, what does not, and what is promising. *Food & Nutrition Bulletin*, 32(4), 365–75.

Statistics Canada. (2014). *Canadian Community Health Survey*. [Data file]. Retrieved from <http://www.statcan.gc.ca/daily-quotidien/140612/dq140612b-eng.htm>

Centers for Disease Control and Prevention (CDC). (2010). *The CDC guide to strategies for reducing the consumption of sugar sweetened beverages*. Retrieved from [http://www.cdph.ca.gov/SiteCollectionDocuments/StratstoReduce\\_Sugar\\_Sweetened\\_Bevs.pdf](http://www.cdph.ca.gov/SiteCollectionDocuments/StratstoReduce_Sugar_Sweetened_Bevs.pdf)

Centers for Disease Control and Prevention (CDC). (2014). *Health and academic achievement*. Retrieved from [https://www.cdc.gov/healthyyouth/health\\_and\\_academics/pdf/health-academic-achievement.pdf](https://www.cdc.gov/healthyyouth/health_and_academics/pdf/health-academic-achievement.pdf)

Chen, H. J., Xue, H., Kumanyika, S., & Wang, Y. (2016). School beverage environment and children's energy expenditure associated with physical education class: An agent-based model simulation. *Pediatric Obesity*. Advance online publication. <http://dx.doi.org/10.1111/ijpo.12126>

City of Toronto. (2011). *The health rationale for offering healthy choices in beverages*. Retrieved from <http://www.toronto.ca/legdocs/mmis/2011/gm/bgrd/backgroundfile-36766.pdf>

Committee on Accelerating Progress in Obesity Prevention. Food and Nutrition Board. Institute of Medicine of the National Academies. (2012). *Accelerating progress in obesity prevention: Solving the weight of the nation*. Retrieved from <https://www.nap.edu/catalog/13275/accelerating-progress-in-obesity-prevention-solving-the-weight-of-the>

Cradock, A. L., Kenney, E. L., McHugh, A., Conley, L., Mozaffarian, R. S., Reiner, J. F., & Gortmaker, S. L. (2015). Evaluating the impact of the healthy beverage executive order for city agencies in Boston, Massachusetts, 2011–2013. *Preventing Chronic Disease* 12, E147.

- Escoto, K. H., French, S. A., Harnack, L. J., Toomey, T. L., Hannan, P. J., & Mitchell, N. R. (2010). Work hours, weight status, and weight-related behaviors: A study of metro transit workers. *International Journal of Behavioral Nutrition and Physical Activity*, 7, 91. <http://dx.doi.org/10.1186/1479-5868-7-91>
- French, S. A., Hannan, P. J., Harnack, L. J., Mitchell, N. R., Toomey, T. L., & Gerlach, A. (2010). Pricing and availability intervention in vending machines at four bus garages. *Journal of Occupational & Environmental Medicine*, 52, Supp. 33.
- Grech, A., & Iman-Farinelli, M. (2015). A systematic literature review of nutrition interventions in vending machines that encourage consumers to make healthier choices. *Obesity Reviews*, 16(12), 1030–41.
- Han-Markey, T. L., Wang, L., Schlotterbeck, S., Jackson, E. A., Gurm, R., Leidal, A., & Eagle, K. (2012). A public school district's vending machine policy and changes over a 4-year period: Implementation of a national wellness policy. *Public Health*, 126(4), 335–37.
- Harrington, S. (2008). The role of sugar-sweetened beverage consumption in adolescent obesity: A review of the literature. *Journal of School Nursing*, 24(1), 3–12.
- Irby, M. B., Drury-Brown, M., & Skelton, J. A. (2014). The food environment of youth baseball. *Childhood Obesity*, 10(3), 260–65.
- James, J., Thomas, P., Cavan, D., & Kerr, D. (2004). Preventing childhood obesity by reducing consumption of carbonated drinks: Cluster randomized controlled trial. *British Medical Journal*, 328, 1237.
- Johnston, L. D., Delva, J., & O'Malley, P. M. (2007). Soft drink availability, contracts, and revenues in American secondary schools. *American Journal of Preventive Medicine*, 33(4 Supp.), S209–25. <http://dx.doi.org/10.1016/j.amepre.2007.07.006>
- Johnson, D. B., Bruemmer, B., Lund, A. E., Evens, C. C., & Mar, C. M. (2009). Impact of school district sugar-sweetened beverage policies on student beverage exposure and consumption in middle schools. *Journal of Adolescent Health*, 45(3 Supp.), S30–37. <http://dx.doi.org/10.1016/j.jadohealth.2009.03.008>
- Jones, S. J., Gonzalez, W., & Frongillo, E. A. (2009). Policies that restrict sweetened beverage availability may reduce consumption in elementary-school children. *Public Health Nutrition*, 13(4), 589–95.
- Kelly, B., Baur, L. A., Bauman, A. E., King, L., Chapman, K., & Smith, B. J. (2010). Examining opportunities for promotion of healthy eating at children's sports clubs. *Australian & New Zealand Journal of Public Health*, 34(6), 583–88.

KFL&A Health Unit (no date). *KFL&A recreation centre food and beverage survey report*. Retrieved from [https://www.kflaph.ca/en/resourcesGeneral/Rec-Centre-Page/KFLA\\_Recreation\\_Centre\\_Food\\_and\\_Beverage\\_Survey\\_Report\\_O2015.pdf](https://www.kflaph.ca/en/resourcesGeneral/Rec-Centre-Page/KFLA_Recreation_Centre_Food_and_Beverage_Survey_Report_O2015.pdf)

Kocken, P. L., Eeuwijk, J., van Kesteren, N. M., Dusseldorp, E., Buijs, G., Bassa-Dafesh, Z., & Snel, J. (2012). Promoting the purchase of low-calorie foods from school vending machines: A cluster-randomized controlled study. *Journal of School Health, 82*(3), 115–22.

Kocken, P. L., van Kesteren, N. M., Buijs, G., Snel, J., & Dusseldorp, E. (2015). Students' beliefs and behaviour regarding low-calorie beverages, sweets or snacks: Are they affected by lessons on healthy food and by changes to school vending machines? *Public Health Nutrition, 18*(9), 1545–53.

Langlois, K., & Garriguet, D. (2011). *Sugar consumption among Canadians of all ages*. Statistics Canada, Health Reports. Retrieved from <http://www.statcan.gc.ca/pub/82-003-x/2011003/article/11540-eng.htm>

Lawrence, S., Boyle, M., Craypo, L., & Samuels, S. (2009). The food and beverage vending environment in health care facilities participating in the healthy eating, active communities program. *Pediatrics, 123*, Supp. 92.

Ludwig D. S., Peterson K. E. & Gortmaker S. L. (2001). Relation between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis. *Lancet, 357*, 505–8.

Matthews, M. A., & Horacek, T. M. (2015). Vending machine assessment methodology. A systematic review. *Appetite, 90*, 176–86. <http://dx.doi.org/10.1016/j.appet.2015.03.007>

Minaker, L. M., Storey, K. E., Raine, K. D., Spence, J. C., Forbes, L. E., Plotnikoff, R. C., & McCargar, L. I. (2011). Associations between the perceived presence of vending machines and food and beverage logos in schools and adolescents' diet and weight status. *Public Health Nutrition, 14*(8):1350–56.

Miller, J., Lee, A., Obersky, N., & Edwards, R. (2015). Implementation of a Better Choice healthy food and drink supply strategy for staff and visitors in government-owned health facilities in Queensland, Australia. *Public Health Nutrition, 18*(9), 1602–9.

Mozaffarian, R. S., Gortmaker, S. L., Kenney, E. L., Carter, J. E., Howe, M. C. W., Reiner, J. F., & Craddock, A. L. (2013). Assessment of a district-wide policy on availability of competitive beverages in Boston public schools. *Preventing Chronic Disease, 3*, E32.

Narain, K., Mata, A., & Flores, J. (2016). Nutrition policy decreases sugar-sweetened beverages in municipal parks: Lessons learned from Carson, California. *Journal of Public Health Management & Practice, 22*(4), 392–94.

National Collaborating Centre for Environmental Health. (2014). *Policy options for healthier food environments in city regions: A discussion paper*. Retrieved from [http://opha.on.ca/getmedia/d1e88d3a-fc46-4cf0-b5bf-e5b343336362/Policy\\_Options\\_Healthier\\_Food\\_Environments\\_Dec\\_2014.pdf.aspx](http://opha.on.ca/getmedia/d1e88d3a-fc46-4cf0-b5bf-e5b343336362/Policy_Options_Healthier_Food_Environments_Dec_2014.pdf.aspx)

Naylor, P. J., Olstad, D. L., & Therrien, S. (2015). An intervention to enhance the food environment in public recreation and sport settings: A natural experiment in British Columbia, Canada. *Childhood Obesity, 11*(4), 364–74. <http://dx.doi.org/10.1089/chi.2014.0148>

Olstad, D. L., Goonewardene, L. A., McCargar, L. J., & Raine, K. D. (2015). If we offer it, will children buy it? Sales of healthy foods mirrored their availability in a community sport, commercial setting in Alberta, Canada. *Childhood Obesity 11*(2), 156–64.

Ontario Ministry of Child and Youth Services. (n.d.). Healthy Eating Matters: Food and nutrition toolkit for residential care settings. *Ontario Ministry of Children and Youth Services*. Retrieved from [http://www.children.gov.on.ca/htdocs/english/specialneeds/healthy\\_eating.aspx](http://www.children.gov.on.ca/htdocs/english/specialneeds/healthy_eating.aspx)

Ontario Society of Nutrition Professionals in Public Health. (2016). *Building healthier food environments within recreation spaces*. Retrieved from [https://www.osnpnh.on.ca/upload/membership/document/2016-02/healthy-eating-in-the-recreational-setting-final\\_1.pdf#upload/membership/document/2016-02/healthy-eating-in-the-recreational-setting-final\\_1.pdf](https://www.osnpnh.on.ca/upload/membership/document/2016-02/healthy-eating-in-the-recreational-setting-final_1.pdf#upload/membership/document/2016-02/healthy-eating-in-the-recreational-setting-final_1.pdf)

Oxford County Public Health. (2016). *A healthier recreation concession pilot project evaluation*. Retrieved from <http://www.oxfordcounty.ca/Portals/15/Documents/BB%20A%20Healthier%20Recreation%20Concession%20Pilot%20Evaluation%20July%202016.pdf>

Park, H., & Papadaki, A. (2016). Nutritional value of foods sold in vending machines in a UK University: Formative, cross-sectional research to inform an environmental intervention. *Appetite, 1*(96), 517–25.

Quinn, E., Johnson, D. B., Krieger, J., MacDougall, E., Payne, E., & Chan, N. L. (2015). Developing local board of health guidelines to promote healthy food access—King County, Washington, 2010–2012. *Preventing Chronic Disease, 12*, E58.

Parliament of Canada: Report of the Standing Senate Committee on Social Affairs, Science and Technology. (2016). *Obesity in Canada: A whole-of-society approach for a healthier Canada*. Retrieved from <http://www.parl.gc.ca/Content/SEN/Committee/421/soci/RMS/01mar16/Report-e.htm>

Schultz, C. R. (2010). Removing junk food and beverages from school vending machines. *Minnesota Medicine, 93*(9), 32–35.



Shi, L. (2010). The association between the availability of sugar-sweetened beverage in school vending machines and its consumption among adolescents in California: A propensity score matching approach. *Journal of Environmental and Public Health*. <http://dx.doi.org/10.1155/2010/735613>

Shimotsu, S. T., French, S. A., Gerlach, A. F., & Hannan, P. J. (2007). Worksite environment physical activity and healthy food choices: Measurement of the worksite food and physical activity environment at four metropolitan bus garages. *International Journal of Behavioral Nutrition & Physical Activity*, 4, 17.

Te Morenga, L., Mallard, S., & Mann, J. (2013). Dietary sugars and body weight: Systematic review and meta-analyses of randomised controlled trials and cohort studies. *British Medical Journal*, 346. Retrieved from <http://www.bmj.com/content/346/bmj.e7492>

Terry-McElrath, Y. M., O'Malley, P. M., & Johnston, L. D. (2012). Factors affecting sugar-sweetened beverage availability in competitive venues of US secondary schools. *Journal of School Health*, 82(1), 44–55.

Thomas, H. M., & Irwin, J. D. (2010). Food choices in recreation facilities: Operators' and patrons' perspectives. *Canadian Journal of Dietetic Practice & Research*, 71(4), 180–85.

Wiecha, J. L., Finkelstein, D., Troped, P. J., Fragala, M., & Peterson, K. E. (2006). School vending machine use and fast-food restaurant use are associated with sugar-sweetened beverage intake in youth. *Journal of the American Dietetic Association*, 106(10), 1624–30.

World Health Organization (WHO). (2015). *WHO Guideline: Sugars intake for adults and children*. Retrieved from [http://www.who.int/nutrition/publications/guidelines/sugars\\_intake/en/](http://www.who.int/nutrition/publications/guidelines/sugars_intake/en/)

Wouters, E. J., Larsen, J. K., Kremers, S. P., Dagnelie, P. C., & Geenen, R. (2010). Peer influence on snacking behavior in adolescence. *Appetite*, 55(1), 11–17.

## Appendix A – Survey Tool

### City of London Beverage Vending Machine Review – SURVEY

[www.surveymonkey.com/r/city-of-london-beverage-vending-machine-review](http://www.surveymonkey.com/r/city-of-london-beverage-vending-machine-review)

#### What is the purpose of the survey?

- The City of London is reviewing what drinks are available for purchase from their vending machines and would like to seek input from city residents who use these facilities.

#### How will the results be used?

- We want to know what you think about the types of drinks that are available for sale from vending machines at city facilities, including arenas, aquatic centres, Storybook Gardens, community centres and the City Hall cafeteria to help us make the best decision for our city.
- The results will be made available in a report that will be posted on the Middlesex-London Health Unit's website and presented to the City of London's Community and Protective Services Committee in December.

#### What will I be asked to do?

- The survey will take approximately 5 minutes to complete.
- You may decline to answer any question.
- This survey is voluntary and responses will be kept confidential.

#### Data Storage and Questions about this Survey

Survey responses are stored by Survey Monkey® and not by the Middlesex-London Health Unit or the City of London, and are governed by the Survey Monkey® Terms of Use. Survey data may remain on Survey Monkey® servers for up to 12 months and are subject to the laws of a jurisdiction outside of Canada.

#### Any questions about the survey can be directed to:

Linda Stobo, Program Manager  
Chronic Disease Prevention and Tobacco Control Team  
Middlesex-London Health Unit  
Tel: (519) 663-5317 ext. 2388  
Email: [linda.stobo@mlhu.on.ca](mailto:linda.stobo@mlhu.on.ca)

Please select where this survey is being completed. Please check (✓) one only.

- |  |   |
|--|---|
| <input type="checkbox"/> Argyle Arena                        | <input type="checkbox"/> Nichols Arena  |
| <input type="checkbox"/> Canada Games Aquatic Centre         | <input type="checkbox"/> North London Community Centre                              |
| <input type="checkbox"/> Carling Arena                       | <input type="checkbox"/> Oakridge Arena   |
| <input type="checkbox"/> Carling Heights Community Centre    | <input type="checkbox"/> Silverwoods Arena  |
| <input type="checkbox"/> City Hall Cafeteria                 | <input type="checkbox"/> Stronach Arena and Community Centre                        |
| <input type="checkbox"/> Farquharson Arena                   | <input type="checkbox"/> Storybook Gardens  |
| <input type="checkbox"/> Glen Cairn Arena                    | <input type="checkbox"/> South London Community Centre                              |
| <input type="checkbox"/> Kinsmen Arena and Community Centre  | <input type="checkbox"/> I completed this survey online and not in a city facility. |
| <input type="checkbox"/> Lambeth Arena and Community Centre  |   |
| <input type="checkbox"/> Medway Community Centre/Ray Lanctin |   |

**1a. During a typical year, how often do you go to any of the following city facilities?**

(Please check (✓) in the appropriate box for each facility)

|                     | Never | Once a year | A few times a year | Once a month | A few times a month | Once a week | A few or more times a week |
|---------------------|-------|-------------|--------------------|--------------|---------------------|-------------|----------------------------|
| Arenas              |       |             |                    |              |                     |             |                            |
| Aquatic Centres     |       |             |                    |              |                     |             |                            |
| Community Centres   |       |             |                    |              |                     |             |                            |
| Storybook Gardens   |       |             |                    |              |                     |             |                            |
| City Hall Cafeteria |       |             |                    |              |                     |             |                            |

**2. What is your age?**

- 17 years old or under
- 18 to 24 years old
- 25 to 44 years old
- 45 to 64 years old
- 65 years old or older
- Prefer not to answer

**3a. Do you bring beverages from home into city facilities (e.g., arenas, aquatic centres, community centres, Storybook Gardens, City Hall cafeteria)?**

- Yes (if yes, proceed to 3b)
- No (if no, skip to 4a)

**3b. If yes, what do you bring with you? Please check (✓) all that apply.**

- Water in a refillable bottle
- Water in a single-use bottle (e.g., Aquafina, Dasani, Nestle, store-brands, etc.)
- Coffee and/or tea
- Fruit-flavoured Water
- Energy Drinks
- Hot chocolate
- Iced Tea
- Juice
- Pop
- Sports drink (e.g., Gatorade)
- Vitamin Water
- Other (please specify) \_\_\_\_\_

**4a. Have you ever purchased drinks from vending machines at city facilities (e.g., arenas, aquatic centres, community centres, Storybook Gardens, City Hall cafeteria)?**

- Yes (if yes, proceed to 4b)
- No (if no, skip to 5)

**4b. If yes, at your last visit to a city facility, how many drinks did you purchase from beverage vending machines?**

- One
- Two
- Three or more

**4c. For whom were these drinks purchased? Please check (✓) all that apply.**

- Self
- Children
- Other family members (e.g., spouse, partner, extended family)
- Friends
- Other (please specify): \_\_\_\_\_

5. Please indicate the level at which you agree or disagree with the following statements by placing a check mark (✓) in the appropriate box:

5a. The following drinks should not be available for sale from the vending machines at city facilities (e.g., arenas, aquatic centres, community centres, Storybook Gardens, City Hall cafeteria).

|  | Strongly Agree | Agree | Disagree | Strongly Disagree | Unsure |
|--|----------------|-------|----------|-------------------|--------|
| Pop and soft drinks (e.g., Pepsi, Diet Pepsi, 7UP, Mountain Dew, Ginger Ale, and Dr. Pepper) |                |       |          |                   |        |
| Sports drinks (e.g., Gatorade)   |                |       |          |                   |        |
| Fruit flavoured water (e.g., Perrier Lime, Aquafina Plus)                                    |                |       |          |                   |        |
| Juice (e.g., Dole, Ocean Spray, Tropicana Orange, Lemonade, Apple, or Cranberry)             |                |       |          |                   |        |
| Iced tea (e.g., Lipton, Lipton Green, Lipton White)  |                |       |          |                   |        |
| Vitamin Water  |                |       |          |                   |        |
| Coffee beverages (e.g., Starbucks Frappuccino, Starbucks Ice Coffee, Starbucks Refreshers)   |                |       |          |                   |        |
| Energy drinks with caffeine (e.g., AMP)  |                |       |          |                   |        |

5b. Snacks (e.g. gum, chips, chocolate bars, peanuts, candy, etc.) should not be available for sale from snack vending machines at city facilities (e.g. arenas, aquatic centres, community centres, Storybook Gardens, City Hall Cafeteria).

| Strongly Agree | Agree | Disagree | Strongly Disagree | Unsure |
|----------------|-------|----------|-------------------|--------|
|                |       |          |                   |        |

5c. Bulk candy (e.g. Jawbreakers, Gum Balls, Chews, Runts, etc.) should not be available for sale from candy vending machines at city facilities (e.g. arenas, aquatic centres, community centres, Storybook Gardens, City Hall Cafeteria).

| Strongly Agree | Agree | Disagree | Strongly Disagree | Unsure |
|----------------|-------|----------|-------------------|--------|
|                |       |          |                   |        |

6. In 2008, a decision was made by the City of London to stop the sale of single-use bottled water from the City Hall cafeteria and from city-owned or city-operated concessions and vending machines in public facilities. Please indicate the level at which you agree or disagree with the following statements by placing a check mark (✓) in the appropriate box:

6a. Since city-owned or operated facilities have water fountains and water bottle filling stations, there should be no beverage vending machines in these facilities.

| Strongly Agree | Agree | Disagree | Strongly Disagree | Unsure |
|----------------|-------|----------|-------------------|--------|
|                |       |          |                   |        |

6b. Single-use bottled water should be made available for sale in the City Hall cafeteria and in beverage vending machines in city facilities (e.g., arenas, aquatic centres, community centres, Storybook Gardens and City Hall).

| Strongly Agree<br>(Proceed to 6c) | Agree<br>(Proceed to 6c) | Disagree<br>(Skip to 6d) | Strongly Disagree<br>(Skip to 6d) | Unsure |
|-----------------------------------|--------------------------|--------------------------|-----------------------------------|--------|
|                                   |                          |                          |                                   |        |

6c. If you agreed or strongly agreed with the above statement, why?

(Please check (✓) all that apply)

- All bottled products contribute to waste, not just single-use bottled water. Water should not have been removed from the vending machine.
- Water is a healthy drink so bottled water should be made available as a choice.
- Bottled water should be available in case people forget to bring water with them or are unaware of the locations of water stations.
- Other (please specify): \_\_\_\_\_

(Skip to End)

**6d. If you disagreed or strongly disagreed with the above statement, why?**

**(Please check (✓) all that apply)**

- I don't buy anything from the beverage vending machine so it doesn't matter to me.
- There are water fountains and water bottle filling stations available for free so I would not pay to get water from the vending machine.
- I always bring my own water to the facility with me so would not buy it.
- All single-use bottles are an environmental waste issue.
- Other (please specify): \_\_\_\_\_

**Thank you for taking the time to complete the survey!**

## Appendix B – Data Collection Quotas per Location

| City Facility                       | Annual Visits | Proportion of Total | Survey Quota |
|-------------------------------------|---------------|---------------------|--------------|
| Argyle Arena                        | 215,000       | 6.79%               | 27           |
| Canada Games Aquatic Centre         | 300,000       | 9.47%               | 38           |
| Carling Arena                       | 108,000       | 3.41%               | 14           |
| Carling Heights Community Centre    | 125,000       | 3.95%               | 16           |
| City Hall Cafeteria                 | 146,500       | 4.62%               | 18           |
| Farquharson Arena                   | 173,000       | 5.46%               | 22           |
| Glen Cairn Arena                    | 99,000        | 3.12%               | 12           |
| Lambeth Arena and Community Centre  | 191,000       | 6.03%               | 24           |
| Medway Community Centre/Ray Lanctin | 146,500       | 4.62%               | 18           |
| Nichols Arena                       | 314,000       | 9.91%               | 40           |
| North London Community Centre       | 75,000        | 2.37%               | 9            |
| Oakridge Arena                      | 150,000       | 4.73%               | 19           |
| Silverwoods Arena                   | 124,000       | 3.91%               | 16           |
| Stronach Arena and Community Centre | 447,500       | 14.12%              | 56           |
| Storybook Gardens                   | 135,000       | 4.26%               | 17           |
| South London Community Centre       | 150,000       | 4.73%               | 19           |



## Appendix C – Recommendations Summarized from the Evidence

|                                       |   |
|---------------------------------------|---|
| <p><b>Vending Machine Options</b></p> | <p>Offer healthy snacks and beverages in vending machines to enable consumers to make healthier choices when eating and drinking away from home.</p> <p>When revising options available for vending machines, evaluate the healthfulness of proposed products based on nutritional content, portion size and price before agreeing to make them available to the public.</p> <p>Work with food industry representatives to increase the availability and accessibility of healthier vending machine products, specifically reinstating single-use bottled water as a priority option in vending machines.</p> |
| <p><b>Water</b></p>                   | <p>Offer single-use bottled water at a discounted price compared to sugar-sweetened beverages and beverages that are nutrient-poor (e.g., pop, diet pop, sports drinks, vitamin water, fruit drinks, energy drinks, sweetened tea and coffee beverages, and energy drinks). The discount should be at 50% less than the unit cost for the other beverages to encourage a change in buying practices.</p> <p>Remove SSBs from the beverage vending machine and replace with single-use bottled water.</p>  |
| <p><b>Policy Development</b></p>      | <p>Review existing wellness policies and nutrition guidelines that have been successfully implemented, evaluated and monitored in municipally run facilities.</p> <p>When implementing a policy change, ensure that there is a comprehensive implementation, monitoring and communications plan to maximize reach and impact.</p>   |
| <p><b>Education</b></p>               | <p>Implement educational posters to promote healthy, nutrient-dense products available in vending machines, as well as municipally available water.</p>   |

## Appendix D – Lessons from the Field: What have other municipalities done? – Additional Examples

| Health Unit                     | Purpose  | Target Population   | Key Elements and Resources Developed   |
|---------------------------------|--|---|--|
| Algoma Public Health            | To increase healthy choices in recreation settings   | Children, youth and adults                                  | <p>Surveys evaluating the food environment and consumer preferences.</p> <p><b>Reports (2015):</b><br/> <a href="http://www.algomapublichealth.com/media/2009/healthy-eating-in-recreational-facilities-a-review-of-the-food-environment-in-algoma-march-2015.pdf">http://www.algomapublichealth.com/media/2009/healthy-eating-in-recreational-facilities-a-review-of-the-food-environment-in-algoma-march-2015.pdf</a><br/> <a href="http://www.algomapublichealth.com/media/2008/consumer-preferences-for-food-and-beverages-in-algoma-recreation-facilities-in-algoma-report-nov-2015.pdf">http://www.algomapublichealth.com/media/2008/consumer-preferences-for-food-and-beverages-in-algoma-recreation-facilities-in-algoma-report-nov-2015.pdf</a></p> |
| Grey Bruce Health Unit          | To raise awareness and help change attitudes toward food choices offered in recreation centres | Municipal councillors, recreation staff and patrons         | <p>Environmental scan report and online survey.</p> <p>88% would like healthier food and drink options available at recreational spaces.</p> <p><b>Recommendation:</b> Report is not enough; recreational departments want help with deputations to council to speak to survey results and help convince council to support changing the environment.</p> <p><b>Next Steps:</b> Create key messages document and talking points to counter any opposition and a presentation for council deputation.</p> <p><b>Report and Infographic (2016):</b><br/> <a href="https://www.publichealthgreybruce.on.ca/About-Us/News-Releases/ArticleID/380">https://www.publichealthgreybruce.on.ca/About-Us/News-Releases/ArticleID/380</a></p>                           |
| Halton Region Health Department | To investigate the food environment in recreation centres                                      | Recreation centre food environment managers and supervisors | <p><b>Goal:</b> To establish a baseline of how food is procured in recreation centres and to determine if there is interest from recreation centres in working with the Health Department to make improvements in the food environment.</p> <p><b>Policy:</b> To assist the City, as part of the Healthy Kids Community Challenge, to implement a Healthy Eating Policy for municipal facility vending and concession kiosks (needs City Council approval to move forward).</p>  |

|  |   |  |   |
|--|---|--|---|
| Haliburton, Kawartha, Pine Ridge District Health Unit (HKPR)     | To increase the availability of healthy foods; To address the placement, promotion and pricing of healthy foods | Municipalities (i.e., Healthy Environments and Policy) | <p><b>Goal:</b> To continue advocacy efforts with Community Centre to identify types of healthy foods that could be offered, placement of foods, pricing and point-of-purchase promotion</p> <p>To support staff at the Centre, recruit volunteers and develop partnerships (i.e., sourcing suppliers that could provide healthy foods at reasonable prices, or securing funding to assist with promotions)</p>   |
| Kingston, Frontenac and Lennox & Addington (KFL&A) Public Health | To improve healthy food environments in municipal recreation centres  | Children, youth and adults                             | <p>Completed patron survey and recreation facility assessments.</p> <p>Meeting with recreation managers to plan improvements to food offered in canteen, vending machines, etc.</p> <p>City released request for proposal for “25% Choose Most / 25% Choose Less / 50% Not Recommended” criteria for vending machines, with language for position and pricing of “Choose Most / Not Recommended” items</p> <p><u>Report, Infographic and Promotional Material:</u><br/> <a href="https://www.kflaph.ca/en/The-Super-Snackables.aspx">https://www.kflaph.ca/en/The-Super-Snackables.aspx</a></p>   |
| Niagara Region Public Health (NRPH)                              | To help improve the food environment in recreation facilities by offering healthier food choices                | Children, youth and adults                             | <p><b>Report (2015):</b> Received comprehensive evaluation of the second phase of the Fuelling Healthy Bodies program, completed by external consultants.</p> <p>Report noted many recommendations beyond the scope and capacity of NRPH public health. Loss of Healthy Communities Fund, which funds this program.</p> <p><b>Next Steps:</b> With support of health promoter and policy analyst, explore a municipal policy approach, while continuing to support local vendors on a consultative basis.</p> <p><u>Fuelling Healthy Bodies: Healthy Eating Policy for Sports Teams:</u><br/> <a href="http://niagararegion.ca/living/health_wellness/healthylifestyles/fuelling-healthy-bodies.aspx">http://niagararegion.ca/living/health_wellness/healthylifestyles/fuelling-healthy-bodies.aspx</a></p> |
| North Bay Parry Sound District Health Unit                       | To help improve the food environment in   | Youth and adults                                       | <p><b>Overview:</b></p> <ul style="list-style-type: none"> <li>• Advocacy letters distributed to all municipal recreational staff and managers in Jan 2016.</li> <li>• Food charter endorsed by many municipalities in</li> </ul>   |

|                             |   |                            |  |
|-----------------------------|---|----------------------------|--|
|                             | recreation facilities by offering healthier food choices                            |                            | <p>2016.</p> <ul style="list-style-type: none"> <li>Plan to work with health promoter to leverage charter in 2017.</li> </ul> <p><u>Long-Term Goal:</u> To have municipalities implement policy related to healthy food options and a healthy eating environment in local recreation settings</p> <p><u>Request for Proposal (2016):</u><br/> <a href="http://www.myhealthunit.ca/en/partnerandhealthprovideresources/resources/rfp-2016-01-general-insurance-and-risk-management-services-program.pdf">http://www.myhealthunit.ca/en/partnerandhealthprovideresources/resources/rfp-2016-01-general-insurance-and-risk-management-services-program.pdf</a></p>  |
| Oxford County Public Health | Healthier Recreational Concession Pilot Project, sustainability and expansion plans | Children, youth and adults | <p>Three pilot projects and evaluations for year one complete.</p> <p>Worked with city concession to introduce healthy menu for summer 2016 (sold &gt; 1,300 units healthy product in two months).</p> <p><u>Next Steps:</u> Share pilot project results and recommendations with recreational managers and municipalities to inform their plans and decision making for food provision and operational costs. Continue working on menu implementation with local Agricultural Society (local berry and dairy suppliers for smoothies).</p> <p><u>Evaluation Reports:</u><br/> <a href="http://www.oxfordcounty.ca/Partners-professionals/Reports-and-publications">http://www.oxfordcounty.ca/Partners-professionals/Reports-and-publications</a></p>   |
| Peel Public Health          | Healthy Food Policy and Environments  | Children, youth and adults | <p>The Peel Healthy Eating Recreation Organization (HERO) evolved into three municipality based projects: Brampton, Mississauga and Caledon.</p> <p><u>Common Elements:</u></p> <ul style="list-style-type: none"> <li>Using Peel Nutrition Guidelines (“Healthy” food and drink and “Other” categories).</li> <li>Developing Foods Offered and Used master list (packaged foods, ingredients and recipes).</li> </ul> <p><u>Nutrition Pitfalls: Vending Machines and Workplaces:</u><br/> <a href="http://www.peelregion.ca/health/workplace/employees/eating/busy-vending.htm">http://www.peelregion.ca/health/workplace/employees/eating/busy-vending.htm</a></p> <p><u>Healthy Vending Machine Choices:</u><br/> <a href="http://www.peelregion.ca/health/workplace/health/eati">http://www.peelregion.ca/health/workplace/health/eati</a></p> |

|  |   |  |   |
|--|---|--|---|
|  |   |  | <a href="#">ng/vending.htm</a>  |
| Peterborough Public Health (formerly Peterborough County City Health Unit) | To explore opportunities to work with municipal recreational centres on healthy eating initiatives;<br>To promote water in municipal recreation centres | County arenas  | <p><u>Goal:</u> To improve vending with beverages that align with PPM 150 and encourage water consumption.</p> <p>Start with one pilot municipal recreation centre.</p> <p><u>Goal:</u> To offer healthy beverage options and promote water consumption in recreation facilities. To develop a healthy food and beverage policy.</p> <p>Install water bottle filling stations at county centres and city arenas.</p> <p><u>Food Policy Report (2011):</u><br/><a href="http://www.foodinpeterborough.ca/wp-content/uploads/2014/07/844_Food+Policy+CFN+Report+March+2011.pdf">http://www.foodinpeterborough.ca/wp-content/uploads/2014/07/844_Food+Policy+CFN+Report+March+2011.pdf</a></p> |
| Sudbury and District Health Unit (SDHU)                                    | To create supportive environments that make the healthy choice the easy choice  | Children, youth, adult influencers and key decision makers | <p><u>Annual Report (2015):</u><br/><a href="https://www.sdhu.com/uncategorized/2015-annual-report-community-first">https://www.sdhu.com/uncategorized/2015-annual-report-community-first</a></p> <p><u>No Time to Wait: Healthy Kids in the Sudbury and Manitoulin Districts (Change the Food Environment: SDHU Grade = C+):</u><br/><a href="https://www.sdhu.com/resources/research-statistics/research-evaluation/reports-knowledge-products/no-time-wait-healthy-kids-sudbury-manitoulin-districts">https://www.sdhu.com/resources/research-statistics/research-evaluation/reports-knowledge-products/no-time-wait-healthy-kids-sudbury-manitoulin-districts</a></p>                   |

## **Appendix E – Q&A: Sale of Sugar Sweetened Beverages on Municipal Property**

### **1) What are sugar-sweetened beverages?**

- Sugar-sweetened beverages (SSBs) are any beverages to which sugar has been added, including soft drinks, fruit drinks, sports drinks, sweetened tea and coffee drinks, energy drinks and sweetened milk or milk alternatives.

### **2) What are the health concerns with drinking SSBs?**

- Excess sugar consumption is linked with poor health outcomes including heart disease, stroke, diabetes, high blood cholesterol, cancer and dental problems.
- Beverages, including soft drinks, fruit drinks, juice and milk contributed to 44% of the average daily sugar intake of children and adolescents and 35% of adults' average daily sugar intake.
- Children with high intakes of SSBs are more likely to be overweight or obese. Each additional SSB consumed per day increases a child's risk of becoming obese by 60%.
- There is a clear link between drinking SSBs and risk of poor diets. When children drink more SSBs, they also drink less water and milk.

### **3) What is the impact of SSBs on teeth?**

- The sugar in SSBs allows for bacteria growth that can lead to tooth decay.
- The acid in carbonated SSBs can weaken teeth and lead to cavities.
- When children drink soft drinks their risk of dental caries nearly doubles.

### **4) Is there still a concern if people only have one SSB in a day or only once in a while?**

- To promote health, the World Health Organization (WHO), Canadian Diabetes Association and Heart and Stroke Association recommend limiting the intake of free sugars to less than 10% of daily calorie intake, which is about 10 teaspoons for a 1700 calorie diet.
- One 355mL can of a typical SSB contains 10 to 12 teaspoons of sugar.
- When children drink SSBs from a young age, they are more likely to prefer the taste of sugary drinks rather than enjoying plain water.

### **5) Why is water the best choice for hydration?**

- Water contains no sugar, calories, additives, preservatives or caffeine.
- In most cases, water is the best choice to replace water lost through physical activity.
- When children drink water at a young age, they are more likely to drink water as they get older.
- When children drink water instead of SSBs they are likely to take in fewer total calories per day.
- Children who consume healthy diets learn better, perform better in school and socially and have more energy to be physically active.
- Municipal tap water is a convenient and free source of hydration.

**6) Why should the City of London remove beverage vending machines from their facilities?**

- Providing healthy environments fits with the City's strategic plan to promote and protect the health of its residents. It positions the City as a role model for healthier food environments.
- City facilities are often community hubs where families participate in recreation and should help promote lifelong healthy lifestyles.
- Beverage vending machines contain mostly SSBs and contribute to an already high daily sugar intake, especially with local children and youth.
- Consumers, particularly children, are more likely to buy and drink SSBs if they are available.
- Most Londoners already bring their own drinks, mostly water in refillable containers, to City facilities.
- Removing beverage vending machines encourages municipal water consumption.
- This is a business decision to not profit from the sale of SSBs.
- Removing beverage vending machines aligns with other City-supported community initiatives that are currently promoting the health benefits of drinking water and reducing the consumption of SSBs (e.g., the Healthy Kids Community Challenge).
- By removing beverage vending machines, the City is supporting the health of Londoners and making the healthy choice the easy one for Londoners. Providing only municipal water at City facilities takes away the pressure to choose between water and less healthy, more expensive SSBs.

**7) Why can't the City of London just add healthier choices into the vending machines?**

- Plain water and white milk are the only healthy drink choices for vending machines. All other vended beverages contain sugar, carbonation and/or artificial sweeteners.
- For hydration and health, drinking water is most often the best choice before, during and after physical activity.
- Consumers are more likely to choose a less healthy drink even when a healthier drink is available.
- Selling SSBs with less sugar in the vending machines encourages the public to think these drinks are healthier or healthy, but they are still SSBs.
- In 2008, the City of London was a leader by removing bottled water from City facilities and has the opportunity to continue to lead in reducing environmental waste from disposable plastic bottles.

**8) Why are you taking away my freedom to choose what I want to drink?**

- Most Londoners already bring drinks, of their own choice, to City facilities.
- If they choose to do so, facility users may purchase drinks readily available for sale elsewhere.
- The argument that facility users' freedom to choose is being affected is similar to arguments used in the past against tobacco legislation. Selling SSBs is not in the best interest of the public, and therefore, it is appropriate for publicly-funded organizations to implement policies that create health promoting environments.

**9) What is the issue with 100% fruit juice?**

- The natural sugar in juice has a similar effect on teeth and overall health as sugar from other SSBs.

- It is recommended that children drink at most ½ cup (125 mL) juice per day. Juice containers commonly available from vending machines are much larger than this.
- Eating a whole piece of fruit provides water and extra nutrients and is more filling than juice.

**10) What is the issue with artificially sweetened soft drinks (i.e., diet soft drinks)?**

- Like regular soft drinks, diet soft drinks provide no nutritional value.
- Drinking artificially sweetened drinks can increase the desire for sweet tasting drinks, instead of enjoying plain water.
- The acid in diet soft drinks can weaken teeth and lead to cavities.
- The safety of artificial sweeteners is not well studied in children, especially if they consume a lot over time.

**11) What is the issue with vitamin waters or sweetened carbonated waters?**

- Vitamin waters and sweetened carbonated waters are still SSBs or contain artificial sweeteners.
- Added sugar provides extra, unnecessary calories.
- Vitamins commonly added to vitamin water are already adequate in the diets of the majority of Canadian children and adults. The body does not use the extra vitamins, but gets rid of them in the urine.
- The acid in carbonated waters can weaken teeth and lead to cavities.

**12) Aren't sports drinks the best choice for active people?**

- Sports drinks are SSBs that contain electrolytes.
- The beverage industry promotes sports drinks as needed for hydration during and after physical activity. However, the need for extra electrolytes only occurs when physical activity is intense and longer than 1 hour or done in extreme heat.
- For the typical child doing routine physical activity for less than 3 hours in normal temperature conditions, use of sports drinks in place of water is not needed.