Attachment A

City of Toronto

Competitiveness-User Rates Municipal Study – Costs and Levies Charged to Manufacturing Operations

November 2, 2015

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Planning for growth

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Executive Summary

The City of Toronto (City) retained Watson & Associates Economists Ltd. (Watson) in late August 2015 to undertake an analysis of the various operating costs and user fees faced by the City's manufacturing sector. This Study provides an analysis and evaluation of the various operating costs and user fees faced by the City's manufacturing sector, and an assessment of the City's competitiveness in this regard against a select group of North American municipalities. Furthermore, this report also provides a peer review the City's preliminary assessment of a separate stormwater services charge and its impacts on Toronto manufacturers.

Phase 1 of the Study provides an assessment of the City's competitiveness from the perspective of service costs for existing businesses, retention and expansion. The findings should be considered in the context of a broader discussion of industry competitiveness, including other additional factors as discussed in Section 1.2 (i.e. development factors, local/regional factors and regulatory environment).

Methods of analysis include the development of three Case Studies for small, medium and large industrial manufacturers defined by operational gross floor area. Table E-1 summarizes the service demand and charging parameters used for each Case Study.

Table E-1 Case Study Charging Parameters

Assumptions	Small Manufacturer	Medium Manufacturer	Large Manufacturer
Physical Characteristics			
Building GFA (square feet)	13,130	95,790	397,120
Lot Size (acres)	1.70	4.19	17.48
Impervious Area (acres)	1.31	3.23	13.46
Consumption Levels (annual)			
Water (cubic metres)	7,200	32,700	426,700
Natural Gas (cubic metres)	280,000	459,000	18,041,000
Electricity (kilowatt hours)	922,000	4,522,000	55,711,000

Each Case Study assessed the operating costs and user fees imposed on Toronto industrial manufactures, and a comparison of these costs against other North American municipalities. Annual cost comparisons are provided for water, wastewater and stormwater services, property taxes, electricity services, and natural gas services.

Corporate income tax rates are also compared for the comparator jurisdictions. Table E-2 summarizes the comparator municipalities used to benchmark Toronto's cost competitiveness.

Table E-2 List of Comparator Municipalities

GTA	Other Canada	United States
Brampton	Edmonton	Atlanta, GA
Markham	Montreal	Chicago, IL
Mississauga	Ottawa	Cleveland, OH
Pickering	Vancouver	Dallas, TX
Richmond Hill		Indianapolis, IN
Vaughan		Los Angeles, CA
		Winston-Salem, NC

Detailed descriptions of the methods employed to generate the Toronto Case Study service demand/charging parameters and comparator municipalities can be found in Chapter 2 of the Study.

Preliminary findings of the Study were presented to stakeholders for input into the process. Chapter 3 provides details of the stakeholder consultation undertaken throughout the Study process. Appendices D and E provide minutes of the two consultation sessions undertaken throughout the Study process.

Detailed discussions of the results of the comparator cost survey can be found in Chapter 4. Figures E-1 through E-3 illustrate the annual cost impacts for each of the three Case Studies, highlighting the City of Toronto's relative position to other comparator jurisdictions.

The Study's findings for Phase 1 indicate that Toronto's competitive position improves with the increased size of the manufacturer within Canada, and also more broadly within North America. For small industrial manufacturers Toronto ranks amongst the higher cost jurisdictions surveyed for the annual operating costs, whereas for the large manufacturers Toronto is amongst the most cost competitive municipalities surveyed. As discussed in greater detail in Chapter 4, this shift in ranking is mainly attributed to high property assessment values per square foot of building gross floor area and higher utility unit costs for small manufacturers.

Figure E-1: Total Annual Service Costs for a Small Industrial Manufacturer

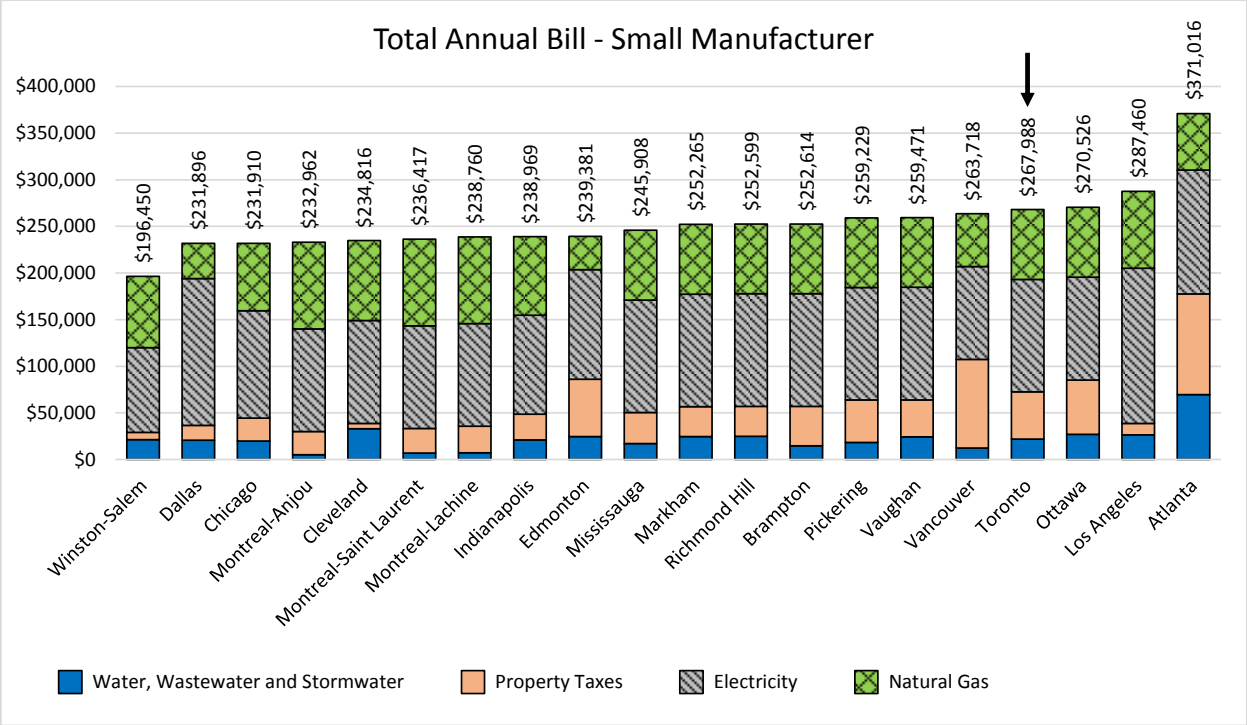


Figure E-2: Total Annual Service Costs for a Medium Industrial Manufacturer

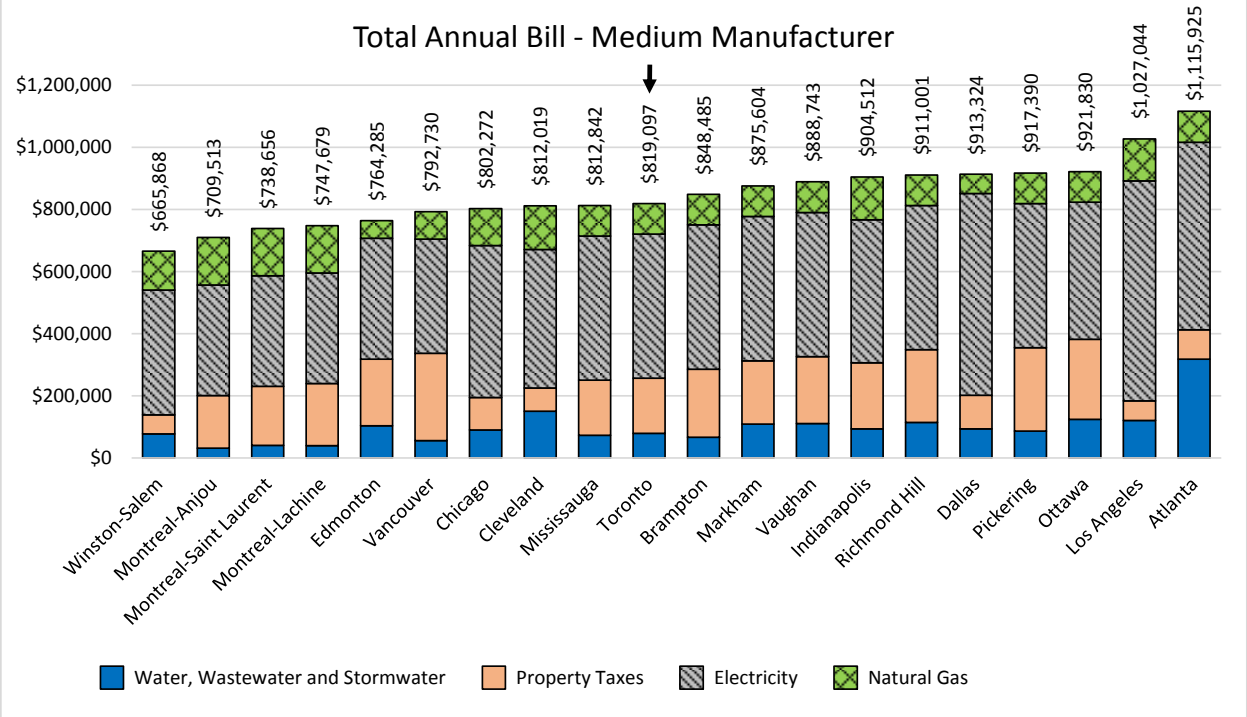
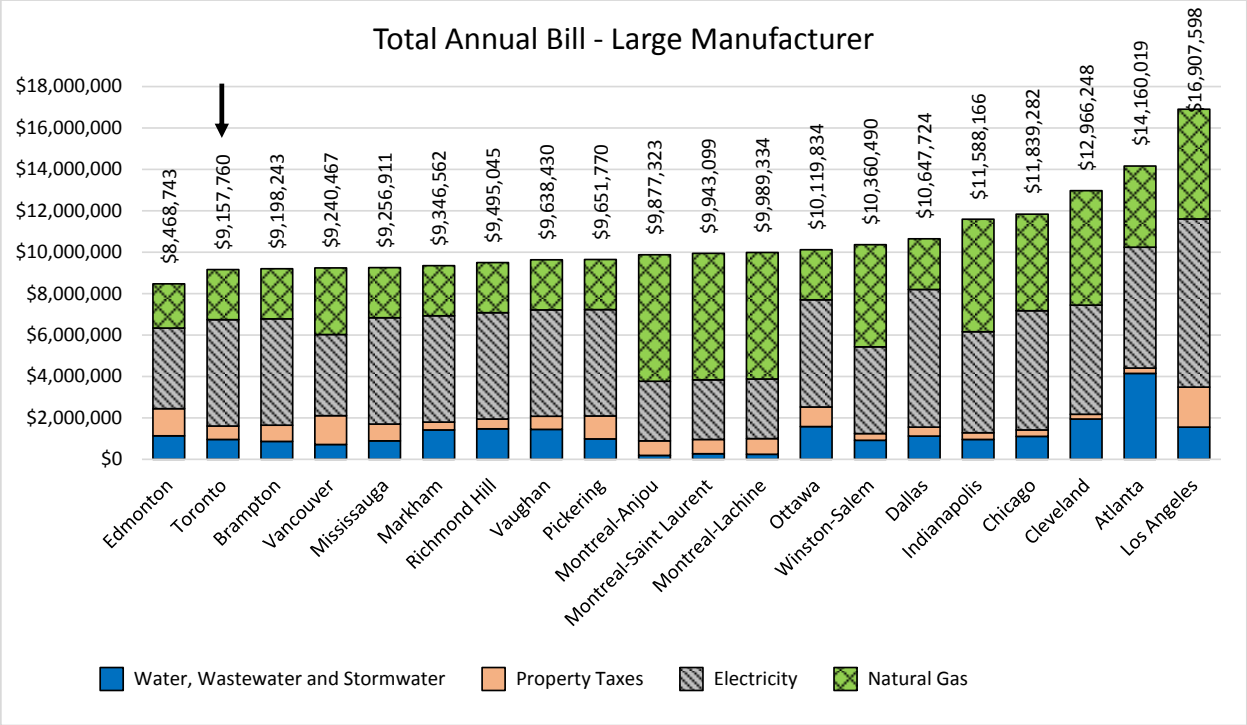


Figure E-3: Total Annual Service Costs for a Large Industrial Manufacturer



Phase 2 of the Study, as provided in Chapter 5, contains the peer review of the City's preliminary assessment for a separate stormwater services user fee and its potential impacts on Toronto industrial manufacturers. The Study finds that the City's preliminary assessment of a separate stormwater charge is reasonable in light of the various assessment criteria discussed in Section 5.2.2, and falls within the range of approaches utilized by other Ontario municipalities with stormwater charges. Moreover, based on the City's preliminary costing, the introduction of a separate stormwater charge would result in a decrease for the total annual cost for water, wastewater and stormwater services for all three industrial manufacturing Case Studies.

1. Project Overview

1.1 Background

The City of Toronto (City) retained Watson & Associates Economists Ltd. (Watson) in late August 2015 to undertake an analysis of the various operating costs and user fees faced by the City's manufacturing sector. The Study was designed to include two phases. The first phase includes the development of three Case Studies of operating costs and user fees imposed on Toronto manufactures, encompassing those levied by municipal governments, other orders of government (e.g. provincial/state and federal) and external agencies, and to provide an assessment of the City's competitiveness in this regard against a select group of North American municipalities. The second phase includes a peer review the City's preliminary assessment of a separate stormwater services user fee and its impacts on Toronto manufacturers.

This report summarizes the two phases of the analysis separately. The first phase summarizes Watson's approach to the competitiveness assessment, the consultation undertaken with industry stakeholders, and the findings of our analysis. The second phase summarizes the results of the peer review assessment of a separate stormwater charge and its potential impacts.

1.2 Scope

Municipalities compete directly for business attraction and retention with other communities within the regional market area and beyond (nationally and internationally). Understanding a municipality's competitive position compared to other communities in the surrounding market area is a fundamental aspect of economic development.

Manufacturing is a critical component of Toronto's "export-based" economy. Manufacturing generates relatively strong economic multipliers that benefit Toronto directly and indirectly. In addition, the sector typically generates high quality employment opportunities (e.g. high paying jobs, full-time employment). Furthermore, manufacturing is accretive to a community's assessment base, which tends to produce more positive net fiscal benefits for the community than other types of development. Thus, a healthy balance between residential and non-residential development is considered highly important to maintaining the economic and fiscal sustainability of Toronto.

Market competitiveness is typically driven by the following broad criteria:

- "Hard" Factors - development costs (e.g. land costs, construction costs) and operating costs (e.g. property taxes, utilities costs);
- Regional/local level "soft" factors - proximity and access to major infrastructure; labour force; access to post-secondary institutions; availability of developable employment land, quality of life; and
- Regulatory environment.

This study assesses competitiveness from the perspective of costs of services for existing businesses (e.g. operating costs) and from the perspective of business retention and expansion. The scope of this assignment is not intended to measure competitiveness from a new business attraction and location decision making perspective (e.g. development costs, evaluating developable employment lands) nor does it consider "soft" factors such as quality of life, access to labour, regulatory environment, etc. The findings of this study could be incorporated into a broader discussion of industry competitiveness, including such factors.

In benchmarking the operating costs and user fees for manufacturing businesses, the Study measures the costs based on demand and charging parameters witnessed in sampled Toronto manufacturing businesses. These demand and charging parameters have been used to calculate annual operating cost comparisons in other jurisdictions, and have not been adjusted to reflect geographic differences (e.g. climate influenced demands on utilities), or application of potential incentive programs to a particular business (e.g. capacity buy-back agreements).

2. Study Design (Phase 1 – Competitive Analysis)

The following sections of this chapter summarize in detail the study design. The design considered the development of 3 separate Case Studies, selection of peer comparator municipalities, and identified sources for various types of operating costs.

2.1 Case Study Analysis

The City's Request for Proposals (RFP) required the development of three (3) Case Studies for small, medium, and large manufacturing operations, based on operational gross floor area (GFA), located within the City of Toronto. This section describes how the GFA size thresholds and Toronto manufacturing operations sample for each Case Study were determined.

2.1.1 Approach to Categorizing Manufacturing Business into 3 Case Studies

- Watson reviewed the City of Toronto 2014 Employment Survey as provided by City Staff.
- A total of 892 single-tenant manufacturing businesses (i.e. NAICS[1] 31-33) were queried from the 2014 Toronto Employment survey.
- Single-tenant manufacturing businesses were then geocoded using Geographic Information System (GIS) software. Using GIS, building GFA was estimated based on building footprints, where data was available. This approach was employed for 811 of the 892 manufacturing operations. For remaining 81 businesses, a GFA estimate was derived by multiplying total employment by an average floor space per worker (FSW) assumption. A FSW assumption of 800 sq.ft. per worker was applied (the approx. average FSW of sites where building footprint data was available).
- Table 2-1 and Figure 2-1 summarize the 892 single-tenant manufacturing businesses queried from the 2014 Employment Survey by GFA. In total the 892 manufacturing operations employ 51,275 employees and occupy approximately 42.6 million square feet of GFA.

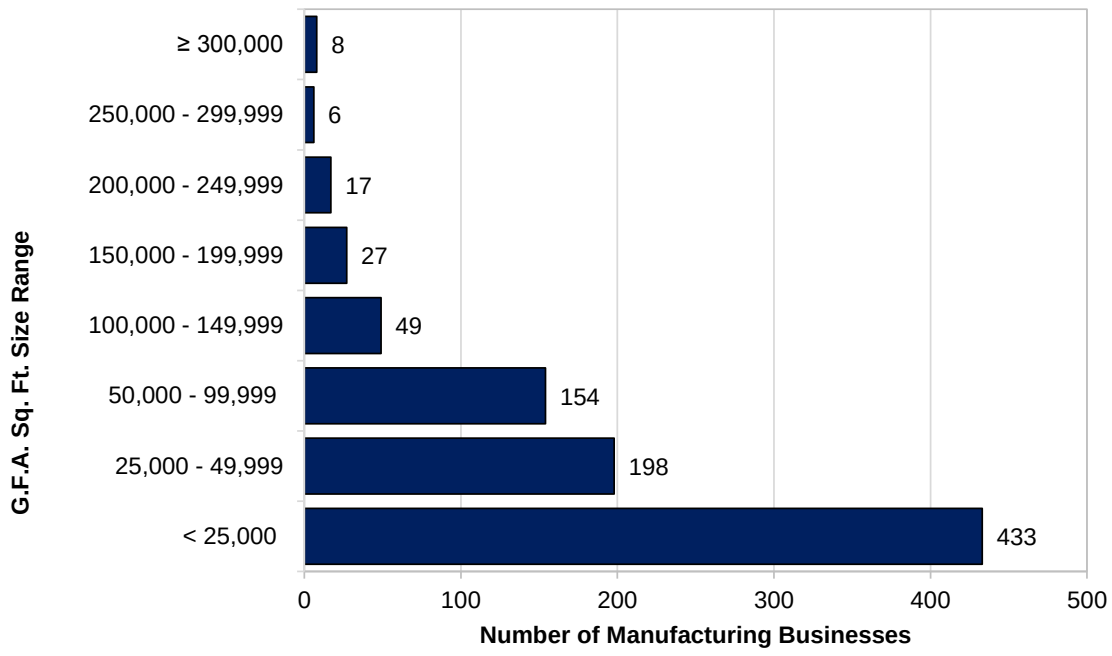
[1] North American Industry Classification System

Table 2-1 Single-Tenant Manufacturing Businesses in the City of Toronto by G.F.A. Size Range (NAICS 31-33)

G.F.A. Size Range	Businesses	Total G.F.A. (Sq. Ft.)	Total Employees	G.FA. / Employee
< 25,000	433	5,165,897	8,146	634
25,000 - 49,999	198	7,132,336	8,930	799
50,000 - 99,999	154	10,713,778	13,468	795
100,000 - 149,999	49	5,929,399	6,843	866
150,000 - 199,999	27	4,656,288	4,455	1,045
200,000 - 249,999	17	3,742,700	4,877	767
250,000 - 299,999	6	1,739,867	920	1,891
≥ 300,000	8	3,508,322	3,636	965
Total	**892**	**42,588,587**	**51,275**	**831**

Source: Derived from the Toronto Employment Survey, 2014 by Watson & Associates Economists Ltd.
Note: GFA is an estimate based on building footprint.

Figure 2-1 City of Toronto Single-Tenant Manufacturing Businesses by G.F.A. (Sq. Ft.)



Notes: G.F.A. Sq. Ft. is an estimate based on building footprint by Watson & Associates Economists Ltd.
Manufacturing includes businesses classifield as NAICS codes 31-33.
Source: Derived from City of Toronto Employment Survey, 2014 by Watson & Assoicates Economists Ltd.

- On average, we determined that the average FSW for the manufacturing sector in the City of Toronto is 831 sq.ft.
- While the definition of small, medium and large manufacturing businesses is subjective, we would generally associate manufacturing businesses with less

than 25 employees as small. In accordance with our FSW estimate, manufacturing businesses of 25,000 sq.ft. or less best fit this definition.

- Large manufacturing businesses represent large freestanding stand-alone businesses. Based on our review, businesses which are 200,000 sq.ft. in size best fit this category.
- Medium manufacturing employees encompass all other manufacturing establishments between the small and large categories.
- Based on the foregoing, the following three categories were recommended to represent small, medium and large manufacturing operations:
    - Small Manufacturing Establishments: < 25,000 sq.ft. (433 businesses in survey sample – 48.5%)
    - Medium Manufacturing Establishments: 25,000 to 199,000 sq.ft. (428 businesses in survey sample – 48%)
    - Large Manufacturing Establishment: 200,000+ sq.ft. (31 businesses in survey sample – 3.5%)

2.1.2 Compilation of a Representative Sample of Toronto Manufacturing Operations within Each Case Study

- Watson queried City of Toronto 2014 Employment Survey for each Case Study size category in order to compile a representative sample of manufacturing operations from various districts within the City.
- The objective was to survey the sampled businesses in order to determine appropriate operating cost, service demands and charging parameters (i.e. consumption levels for services such as hydro, gas and corporate net income before taxes).
- To narrow the sample selection Watson requested input form the City's Economic Development & Culture Division, and received a list of approximately 100 companies from a broad range of industrial sectors for potential inclusion in the sample.
- Ultimately, a list of 51 manufacturers (10 Small, 28 Medium, and 13 Large) was compiled.
    - 11 of the sampled manufacturers are members of the Toronto Industry Network (TIN) and were contacted through Mr. Paul Scrivener, Director of External Affairs for TIN, to provide questionnaire responses.
    - The remaining 40 manufacturers were members of the Industrial Manufacturing Program Advisory Committee in Toronto (IMPACT), which

were contacted directly by Watson regarding completion of the questionnaire.

- Table 2-2 summarizes the charging parameters from the sampled Toronto manufacturers by Case Study. Further information about the survey and data collected is presented in Section 3.1.

Table 2-2 Case Study Charging Parameters

Assumptions	Small Manufacturer	Medium Manufacturer	Large Manufacturer
Physical Characteristics			
Building GFA (square feet)	13,130	95,790	397,120
Lot Size (acres)	1.70	4.19	17.48
Impervious Area (acres)	1.31	3.23	13.46
Consumption Levels (annual)			
Water (cubic metres)	7,200	32,700	426,700
Natural Gas (cubic metres)	280,000	459,000	18,041,000
Electricity (kilowatt hours)	922,000	4,522,000	55,711,000

2.2 Comparator Selection

To effectively assess Toronto's competitiveness in the operating cost of services within the manufacturing sector, a broad range of municipalities within North America were selected as comparators to benchmark the City against. The municipalities selected were determined through review of manufacturing markets, consultation with City of Toronto Economic Development & Culture Division staff, and where comprehensive data was readily available.

For inclusion in the comparator survey, a municipality's most immediate competitors tend to be municipalities within its own regional market. As such, the comparative analysis included large urban municipalities within the Greater Toronto Area (G.T.A.) including Brampton, Markham, Mississauga, Pickering, Richmond Hill and Vaughan. Toronto also competes with other major cities across North America. As part of this assignment the municipalities of Edmonton, Montreal, Ottawa and Vancouver were selected for the comparator analysis and represent cities with significant industrial markets within the Canadian context. The analysis also included seven U.S. municipalities including Atlanta, Georgia; Chicago, Illinois; Cleveland, Ohio; Dallas, Texas; Indianapolis, Indiana; Los Angeles, California; and Winston-Salem, North

Carolina. The U.S. comparators reflect broad geographic representation and a diverse range of industrial markets. Atlanta, Chicago, Dallas and Los Angeles are large municipalities with significant industrial bases comparable in size to Toronto. Cleveland and Indianapolis also have notable industrial bases and represent more mature markets. Winston-Salem, while a mid-size industrial market, is highly competitive and has seen significant industrial growth over the past decade.

A high level profile of each comparator municipality is provided in Appendix A, and the final list of comparator municipalities is provided in Table 2-3.

Table 2-3 List of Comparator Municipalities

GTA	Other Canada	United States
Brampton	Edmonton	Atlanta, GA
Markham	Montreal	Chicago, IL
Mississauga	Ottawa	Cleveland, OH
Pickering	Vancouver	Dallas, TX
Richmond Hill		Indianapolis, IN
Vaughan		Los Angeles, CA
		Winston-Salem, NC

2.3 Jurisdictional Review

This section presents the methods utilized for collecting and analyzing cost data for the comparator municipalities. The section is organized into five sub-sections, one for each of the cost components considered in the study (i.e. water, wastewater, and stormwater services; property taxes; electricity services; natural gas services; and corporate income tax rates).

2.3.1 Municipal Water, Wastewater and Stormwater Services

An important cost driver for industrial manufacturers can be the cost of water, wastewater and stormwater services. The amounts paid by manufacturers across the list of comparators in this study can vary significantly as there are many different methods that municipalities can use to recover the costs to operate these services. For example, municipalities may impose water, wastewater, and storm fees based on water consumption. Other municipalities may elect to impose separate charges for stormwater services based on land area (or assumed impervious area). Others still may utilize property taxation to recover all or a portion of these costs, thus basing the costs of service on assessed value.

All municipalities surveyed recover water service costs through water user fees. In addition, the municipalities of Chicago, Los Angeles and Montreal impose a separate property tax rate to fund a portion of water services that supplement the water user fees.

Similarly for wastewater services, all municipalities recover costs of wastewater service through user fees (i.e. separate wastewater rates or combined with water rates), with the exception of Montreal. The boroughs of Montreal, i.e. Anjou, Saint Laurent, and Lachine, recover these costs of service through property taxes.

Lastly, with respect to stormwater services, the municipalities of Chicago, Ottawa, Toronto, Vancouver and Vaughan recover the costs of service through either separate wastewater rates or combined with water rates. The municipalities of Atlanta, Dallas, Edmonton, Indianapolis, Los Angeles, Markham, Mississauga, Richmond Hill, and Winston-Salem fund their stormwater services through specific stormwater user fees. The remaining municipalities of Brampton, Montreal and Pickering fund stormwater services through property taxes.

With respect to each of these methods, municipalities have flexibility in determining how these fees and charges are determined and applied. In municipalities recovering the costs of water, wastewater and/or stormwater services through water consumption based rates, these rates may be imposed at a constant rate, increasing block rate (rate increasing by interval of consumption), decreasing block rate (rate decreasing by interval of consumption) or some combination of these rate structures. These rate structures may include base charges that adds a fixed portion to the bill based on the size of water meter. The meter size assumptions used for this Study for each Case Study are as follows: small manufacturer – 50mm, medium manufacturer – 150mm, and large manufacturer – 250mm. Municipalities imposing fees based on land area typically modify these land areas for assumed impervious area, based on design criteria or sampled/specific property impervious area characteristics. Municipalities recovering costs of services through property taxation may elect to create separate tax classes (e.g. large industrial) and specify taxation ratios between property tax classes.

The City of Toronto utilizes a declining block rate for industrial customers participating in the Industrial Water Rate Program. Under this program $3.1945/m^3 is charged for the first 6,000m^3 of water consumed annually, with consumption above this threshold charged at $2.2361/m^3. For industrial customers not participating in the Industrial Water Rate Program, the rate is constant at $3.1945/m^3 for all water consumption. The Industrial Water Rate Program imposes strict guidelines to which industrial customers

must adhere to be eligible for the declining block rate structure. This study uses the declining block rate structure for the purposes of the Case Studies to compare Toronto's relative competitiveness.

Amongst the comparator municipalities, for water services:

- ten (10) municipalities utilize a constant rate structure, with two (2) of these municipalities also imposing a base charge component;
- four (4) municipalities, including Toronto, utilize a declining block rate, with two (2) of these municipalities imposing a base charge component;
- four (4) municipalities utilize an increasing block rate, with all four (4) imposing base charges; and
- one (1) municipality utilizes a rate structure where the rate increases over four consumption interval blocks and subsequently decrease at a fifth consumption interval block (also referred to as a hump-back rate structure).

Wastewater rates imposed in municipalities may be structured the same as water rates, i.e. applying wastewater rates to water consumption in the same manner. Other wastewater rate structure options include a flat rate (i.e. uniform charges not based on consumption) or a surcharge imposed as a percentage of a customer's water bill.

Amongst the comparator municipalities, for those imposing a specific wastewater rate:

- ten (10) municipalities utilize a constant rate structure, with five (5) of those municipalities imposing a base charge;
- one (1) municipality utilizes an increasing block rate structure with a base charge component;
- one (1) municipality uses a decreasing block rate structure with a base charge component;
- one (1) municipality employs a decreasing block rate for wastewater treatment services and a constant rate, with a base charge, for drainage collection and transmission services; and
- one (1) municipality imposes as wastewater surcharge as a percentage of the total water bill.

Stormwater user fees are applied in many different ways. Phase 2 of this Study (Section 5.2) address in detail common methods used to recover the costs of stormwater services. In addition to describing the various methods, Section 5.2 also addresses the effectiveness, fairness and administration of utilizing these various structures. As previously stated, there are a number of municipalities that do not have a

stormwater charge and collect revenue for stormwater services through other means (i.e. water/wastewater rates and property taxes).

Amongst the comparator municipalities, for those imposing a specific stormwater rate:

- one (1) municipality utilizes a flat rate structure (i.e. uniform charge for all non-residential customers);
- one (1) municipality utilizes a constant rate structure based on land area (i.e. charge per unit of land area);
- two (2) municipalities impose a constant rate based on property size, modified by a runoff coefficient;
- Three (3) municipalities impose a constant rate based on the impervious area of each specific property; and
- one (1) municipality imposes a separate tax rate for stormwater services (i.e. rate per $ of current value assessment).

The Study gathered the rates and fee structures that municipalities use to charge manufacturers for these services and applied them to an assumed levels of service demands (e.g. water consumption, impervious land area, etc.). Data sources for rates and fee structures from the respective municipalities are presented in Appendix B.

Table 2-2 summarizes the charging parameters for each Case Study used to calculate the annual water, wastewater, and stormwater service costs. Where these services are not recovered from user fees and charges, the portion of the annual property tax bill applicable to these services have been included in the comparison, and correspondingly removed from the comparison of annual property tax bills. For converting water, wastewater and stormwater service costs in U.S. municipalities to Canadian dollars an exchange rate of 1.261193 CAD/USD has been applied. Please see Section 2.3.3 for information on how the exchange rate was determined.

Wastewater Industrial Business Policies

As a complementary exercise, Watson reviewed the comparator municipalities' policies with respect to industrial businesses in their jurisdictions. More specifically, the policies that municipalities have in place to manage pollutants that enter into their wastewater systems. The following paragraphs summarize the policies currently in effect in the comparator municipalities. Appendix B includes links to the municipal comparator websites with more detailed information on the wastewater policies and programs, regarding both restrictions and incentives.

The City of Toronto's sewer by-law imposes strict limits on the amount of heavy metals and toxic organic compounds permissible within wastewater discharged to the sanitary sewers, storm sewers and natural watercourses. Surcharge agreements with the City allow businesses to discharge more than the treatable parameters listed in the by-law. These agreements prescribe a formula for the calculation of the surcharge amount, with a current fee of $0.57/kg for the four surcharge parameters (i.e. biochemical oxygen demand (B.O.D.), phenolics, total phosphorus, and total suspended solids (T.S.S.)).

Most of the comparator municipalities surveyed impose similar surcharge arrangements, that is, they have established limits on the amount and types of substances that can be released into municipal systems utilizing a by-law or ordinance (in the case of the U.S. municipalities). Businesses that exceed the limits defined by the municipality have the ability to enter into surcharge agreements requiring them to pay for the additional costs of treating wastewater with higher concentrations of substances.

A similar method prevails with the use of a permit system. Municipalities can require companies to apply for permits to discharge industrial waste into the municipal system. These permits tend to require a company to provide information regarding the type and amount of pollutant that will be discharged. Some municipalities combine this with a surcharge program and test for levels of B.O.D. and T.S.S. that originate from an industrial source. The municipality applies a charge to cover the increase in costs relating to the treatment of pollutants stated in the permit or tested higher than defined "normal" levels.

Each municipality has their own specific requirements in regards to acceptable levels of toxins, type of toxins, etc. Each municipality may differ in regards to their surcharge agreements, as they are typically one-off agreements between the municipality and the business. Permit systems typically have the same effect as businesses are charged a fee on a case-by-case basis.

2.3.2 Property Taxation

Property taxation estimates for the comparator municipalities were based on average assessed values for manufacturing sites and current local property tax rates. The property assessment values in the comparator municipalities were derived from a survey of comparable manufacturing sites within each jurisdiction to arrive at average per square foot assessed values. The survey of sites was completed through a desktop review that involved the identification of 15 manufacturing sites (5 in each size class) for each comparator municipality representing a broad range of sub-sectors and building ages. Per square foot property assessed values were derived for each comparator

municipality within each of the three Case Studies. It is noted, that for the comparator municipalities, no small manufacturing businesses were contained in the Richmond Hill sample. Similarly, no large manufacturers were contained in the sample for Pickering and Anjou (Montreal). To adjust for these circumstances, average assessed values per square foot from the medium Case Study was applied in these jurisdictions.

Property tax rates for Canadian municipalities were obtained from the respective municipal websites or through direct contact with municipal finance departments. All of the U.S. comparators' actual tax bills, searchable by property, and/or tax rates were provided on municipal websites. For the U.S. municipalities surveyed, property tax rates are generally not uniform throughout the municipality, with area-specific rates applied (e.g. property tax rates for different school districts in the same municipality). To account for this variation, this study considered actual tax bills for all of the sampled businesses within each of the U.S. municipalities. Appendix B includes a complete list of the sources consulted regarding property tax rates in each jurisdiction.

Once the total property tax bill was calculated for each municipal comparator, the portion of the property tax bill attributable to water, wastewater and stormwater services was removed and re-allocated to the water, wastewater and stormwater cost comparisons for each Case Study. As noted in Subsection 2.3.1 above, the municipalities of Brampton, Chicago, Los Angeles, Montreal and Pickering all recover costs of water, wastewater and/or storm services from property taxes to varying degrees. This resulted in the total adjusted annual property tax bills for each Case Study.

2.3.3 Electricity

Two major sources were consulted to ascertain electricity rates for the comparator survey. Data for Canadian municipalities was obtained from a report published annually by Hydro Quebec[1], and data for U.S. municipalities was obtained from a report published annually by the Lincoln Electric System of Lincoln, Nebraska[2]. Both of these major annual surveys of electricity costs are widely cited and provide a solid foundation for annual bill analysis. These data sources provided cost comparisons for a variety of

[1] Hydro-Quebec (2015). *Comparison of Electricity Prices in Major North American Cities*. < http://www.hydroquebec.com/publications/en/corporate-documents/comparaison-electricity-prices.html>
[2] Lincoln Electric System (2013). *National Electric Rate Survey*. < http://www.les.com/pdf/rates/rate-survey.pdf>

power demand and consumption volumes. Table 2-4 summarizes the demand and consumption volumes that were utilized from each survey.

Table 2-4 Power Demand and Monthly Consumption Volumes Surveyed by Hydro Quebec and the Lincoln Electric System

	Quebec Hydro Survey	Lincoln Electric System Survey
Small Manufacturer		
Power demand	500 kW	500 kW
Monthly consumption	100,000 kWh	150,000 kWh
Medium Manufacturer		
Power demand	1,000 kW	1,000 kW
Monthly consumption	400,000 kWh	400,000 kWh
Large Manufacturer		
Power demand	5,000 kW	1,000 kW
Monthly consumption	3,060,000 kWh	650,000 kWh

The Quebec Hydro survey provides unit rates, which were applied to the Case Study consumption estimates to determine annual bills. The Lincoln Electric System Survey provides total estimated annual bills for each consumption profile. As such, the annual costs for each consumption profile within the Lincoln Electric System survey were transformed into unit rates and subsequently applied to the Case Study consumption estimates to determine annual bills. It is noted that the only direct comparison exists for the medium manufacturer category, with variation in the surveys' characteristics for small and large manufactures. Because the Lincoln Electric System survey did not provide unit cost estimates for the large manufacturer category, the biggest demand level available (i.e. 650,000 kWh annually) was used as a proxy. As such, it is possible that the total annual electricity bills for large manufacturers may be overstated for the U.S. jurisdictions, as generally unit costs fall with higher consumption.

The Hydro Quebec survey converts assumed an exchange rate of 1.261193 (i.e. 1 USD = 1.261193 CAD), the rate in effect at noon on April 1, 2015. For ease of benchmarking costs with the Hydro Quebec survey, the same exchange rate was used to convert U.S. dollars into Canadian dollars throughout this Study. This exchange rate is within 4% of

a longer run average exchange rate as reported by the Bank of Canada[1] (August 2014 – August 2015 average monthly exchange rate).

2.3.4 Natural Gas

Unlike the electricity costs, a comprehensive survey of natural gas costs on industrial manufacturers is not available. As such a number of methods were used to estimate annual natural gas costs. For Canadian municipalities, annual natural gas bills were calculated by applying utility rates from Enbridge (Toronto), GazMetro (Montreal), Direct Energy (Edmonton), and FortisBC Energy (Vancouver). For the U.S. jurisdictions, data was obtained from the U.S. Energy Information Administration[2]. This data source provides the price of natural gas used for heat, power, or chemical feedstock for businesses engaged in manufacturing, mining or other mineral extraction, agriculture, forestry, fisheries and construction operations. As such, these prices reflect broad averages over the entire manufacturing sector and therefore do not provide rate variations over demand or consumption profiles. Average consumptive rates obtained from the U.S. Energy Information Administration were applied to the Case Study consumption estimates to derive annual bills. It is noted that applying these average rates may underestimate the total annual bills in U.S. markets, particularly for small and medium manufacturers.

2.3.5 Corporate Income Tax

The study's initial methodology sought to quantify the annual costs of corporate income taxes imposed by other orders of government on industrial manufactures. Through our survey of Toronto industrial manufactures it was determined that information on average annual pre-tax net income would not be provided by participants, principally due to privacy and competitiveness concerns. Moreover, amongst survey participants there may be significant variation in annual pre-tax net income which may not be prudent to average across Case Study categories. For these reasons the study provides the income tax rates applicable within each comparator jurisdictions but does not calculate the annual costs. This provides a relative comparison of these costs within each jurisdiction, but does not quantify the extent of the corporate income tax burden relative to other costs (e.g. water, wastewater, stormwater, property taxes, etc.).

[1] Table 176-0064 Foreign exchange rates in Canadian dollars, Bank of Canada, monthly (dollars)
[2] U.S. energy Information administration http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PIN_DMcf_m.htm Accessed: September 28, 2015

Corporate income tax rates were provided from a number of sources, including a report on taxation by Raymond Chabot Grant Thornton[1], a leading accounting firm in Quebec, as well as Canadian Corporate Tax Tables compiled by KPMG[2]. The comparison table of corporate income tax rates by comparator municipality is presented in the findings chapter of this report (i.e. Section 4.5).

[1] Taxation in Québec: Favourable Measures to Foster Investment <https://www.investquebec.com/documents/int/publications/FiscaliteQC_2015_an.pdf>

[2] Source: <http://www.kpmg.com/Ca/en/IssuesAndInsights/ArticlesPublications/TaxRates/Income-Tax-Rates-for-General-Corporations-2015-and-2016.pdf>

3. Consultation Summary

3.1 Toronto Manufacturing Industry Survey

As noted in Section 2.1.2, a sample of 51 Toronto manufacturing businesses were surveyed. The purpose of the survey was to obtain input on fees and charges imposed on their operations, and to receive quantifiable measure of various charging parameters for the services being considered in the analysis (e.g. utility consumption). A copy of the questionnaire circulated to the survey participants is provided in Appendix C. Out of the 51 manufactures surveyed, two declined to participate (citing resource constraints), 11 provided responses directly, and three provided an aggregated response through TIN to ensure confidentiality of the information.

The survey respondents' reported annual consumption levels of electricity and natural gas were used to inform appropriate consumption levels for the three manufacturing Case Studies. In total, data on annual electricity consumption was provided by four medium manufacturers and six large manufacturers. Data on natural gas consumption was provided by three medium manufacturers and six large manufacturers. Arithmetic means of these annual consumption levels were used to determine consumption levels for the medium and large hypothetical manufacturing Case Studies. No energy consumption data were provided by small manufacturers in the sample. As such, average consumption per square foot of GFA was derived based on the responses received from medium and large manufacturers, and was then applied to the assumed GFA of a small manufacturer (i.e. 13,130 ft^2).

At the presentation of preliminary findings to the City's manufacturing industry stakeholders (see Section 3.3 – Industry Consultation Session), some concerns were raised about the energy consumption patterns not being representative of manufacturers present at the session. Namely, some participants felt that the consumption of natural gas relative to electricity was overstated in some of the Case Studies. This issue was partially rectified after further survey responses were received and consumption averages were informed by a larger number of observations.

Furthermore, Watson reviewed the relative share of annual energy consumption for all manufacturing industries in Canada as published by Statistics Canada[1]. Figure 3-1 summarizes the electricity/natural gas relative energy consumption mix for a variety of manufacturing industries. Based on this data, the mix ranges from 21% electricity/79%

[1] Table 128-0006 - Energy fuel consumption of manufacturing industries in gigajoules

natural gas for operations within the petroleum and coal products manufacturing sector, to 73% electricity/27% natural gas for operations within the computer and electronic product manufacturing sector. The average energy mix for the manufacturing sector as a whole is approximately 46% electricity/54% natural gas. The electricity/natural gas energy mixes implicit in the energy consumption levels established for the three Case Studies all fall within the range of energy mixes observed in this publication, with the Small Case Study at 24% electricity/76% natural gas, Medium Case Study at 48% electricity/52% natural gas and the Large Case Study at 23% electricity/77% natural gas.

3.2 Additional Input from Industry Survey

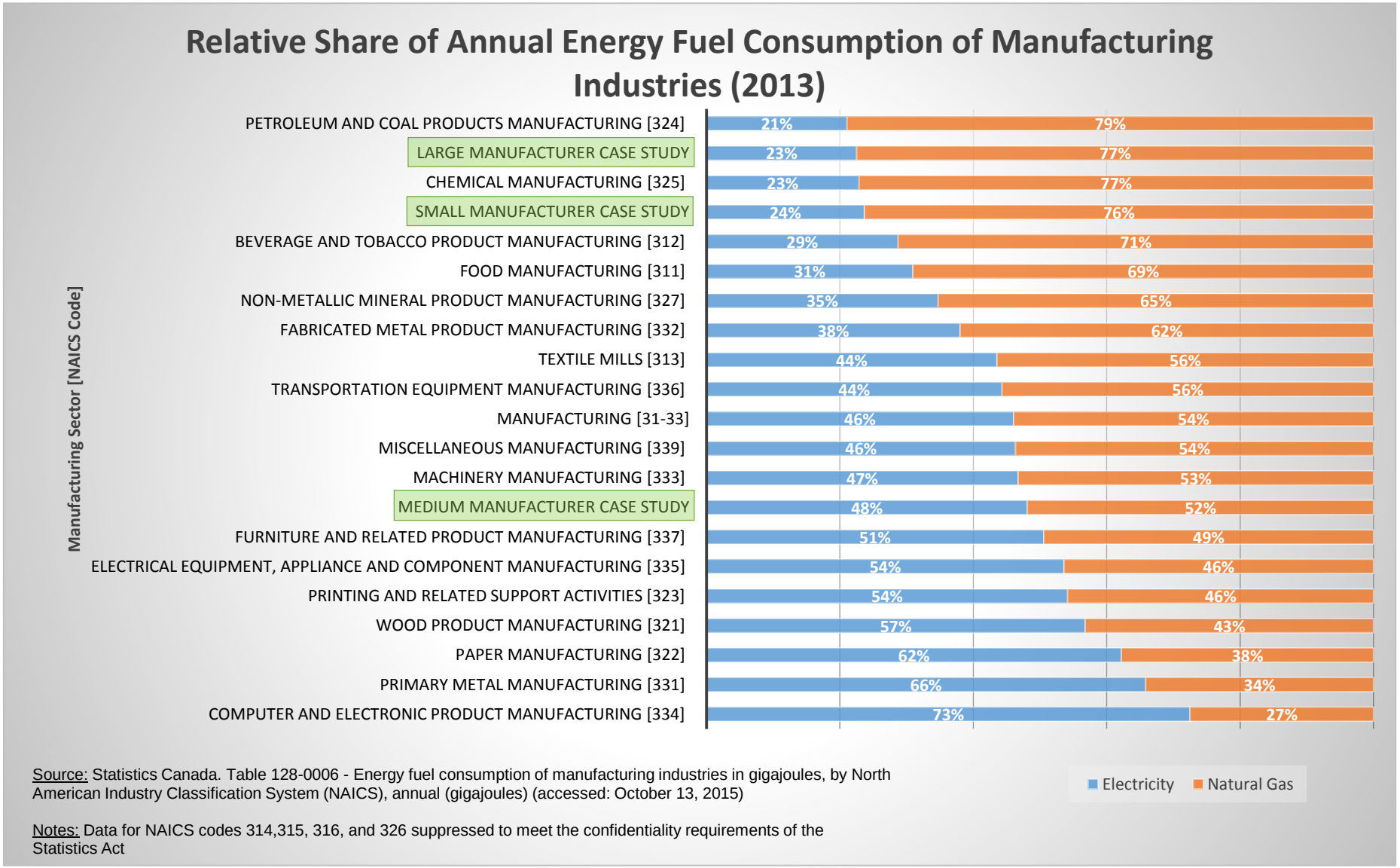
Some of the survey respondents provided additional information beyond the basic service demands/consumption charging parameters and annual costs. This section summarizes some of the items identified by survey respondents that may also contribute to the overall cost-competitiveness of Toronto manufacturing industry. Although detailed analysis of these items is beyond the scope of this study, they are identified herein to potentially inform further studies of cost competitiveness.

- Electrical Safety Authority fees
- Workplace Safety Insurance Board fees
- Waste collection fees (Stewardship Ontario blue box)
- Toronto Port Authority
- Toronto Board of Trade membership fees
- Toronto fire alarm charges (per false alarm incident)
- Ministry of the Environment water taking fee
- Garage license fees (imposed by the City of Toronto) – it was noted in the survey response that the cost of these fees are modest, but the compliance requirements are cumbersome (criminal background checks, notarized proof of identification)

Some of the survey respondents identified their participation in the incentive for energy conservation program.

Furthermore, it was noted that although the City is seeking advice from industrial employers it has started generally too many groups (e.g. IMPACT, PAYE, North Etobicoke Industrial Round Table). It was noted that the City should try to streamline these groups and agenda. It was suggested that the City should come out to speak with individual firms about concerns.

Figure 3-1 Electricity/Natural Gas Energy Mixes in Manufacturing Industries



Source: Statistics Canada. Table 128-0006 - Energy fuel consumption of manufacturing industries in gigajoules, by North American Industry Classification System (NAICS), annual (gigajoules) (accessed: October 13, 2015)

Notes: Data for NAICS codes 314,315, 316, and 326 suppressed to meet the confidentiality requirements of the Statistics Act

3.3 Toronto Manufacturing Industry Consultation Session

Watson led an industry consultation session on September 30, 2015. The consultation session was attended by 12 representatives from the City's manufacturing industry. The objective of the consultation session was to present to stakeholders the Study methodology, summary of survey responses received up to that point in time, data gaps and preliminary findings. Preliminary findings identified through initial research were presented with respect to a select group of operating costs (i.e. municipal utilities (water, wastewater, and stormwater services), property taxes, provincial and federal corporate income tax rates, and utility rates from external agencies (i.e. electricity and natural gas)). Watson and City Staff received input from industry representatives, both with respect to the preliminary findings as well as suggestions for addressing existing data gaps in a timely manner. Additional industry survey responses were also initiated through the consultation session.

Minutes of the manufacturing industry consultation session, as prepared by City Staff, are provided in Appendix D.

3.4 Environmental Stakeholder Groups Consultation Session

A second stakeholder consultation session was held on October 8, 2015. Although similar in format to the manufacturing industry consultation session, the second consultation session also included discussions on environmental issues. The session was attended by two representatives, one from Toronto Environmental Alliance and another from Ontario Green Infrastructure Coalition.

Minutes of the environmental stakeholder groups consultation session, as prepared by City Staff, are provided in Appendix E.

4. Study Findings (Phase 1)

4.1 Water, Wastewater, and Stormwater Costs

This section of the study presents the annual water, wastewater and stormwater costs imposed on industrial manufacturing operations within the City of Toronto and comparator municipalities. Figure 4-1 through 4-3 below summarize the estimated annual bills for water, wastewater, and stormwater services from user fees and property taxes, as applicable, for each of the Case Studies (i.e. small, medium and large manufacturers). The ranking of municipalities is provided in ascending order, from the least cost jurisdiction to the highest cost jurisdiction.

As outlined in Section 2.3.1, most of the jurisdictions surveyed recover these service costs through user fees. However, there are some jurisdictions that recover portions of these service costs through property taxation (i.e. Brampton, Chicago, Los Angeles, Montreal and Pickering). Portions of the annual property tax bill for these services were extracted from the property tax comparison and included in this section for a more accurate presentation of annual water, wastewater and stormwater service costs.

Figure 4-1 summarizes the annual costs of water, wastewater and stormwater services for small industrial manufacturing operations consuming 7,200m^3 of water annually. In this survey of annual costs, the City of Toronto would rank 12th out of the 20 jurisdictions at an annual cost of $21,850. The highest cost jurisdiction for these services is Atlanta at $69,698 and the lowest cost jurisdiction is the Borough of Anjou in Montreal at $5,079.

For medium sized industrial manufacturers consuming 32,700m^3 of water annually (Figure 4-2), the City's competitive position improves to a ranking of 8th position at a total annual cost of approximately $78,870. This ranking is two positions better, and $7,700 less expensive, than the median municipality of Pickering. Atlanta and Anjou, Montreal are still the highest and lowest cost jurisdictions for these services at $317,829 and $31,653 respectively.

Large manufacturers consuming an estimated 426,700m^3 of water annually are presented in Figure 4-3. The annual costs of service range from $185,660 in Anjou, Montreal to $4.15 million in Atlanta. The City of Toronto ranks 9th out of the 20 jurisdictions at $0.96 million annually – comparable with the Pickering, the median municipality in the survey.

Figure 4-1: Small Sized Manufacturer

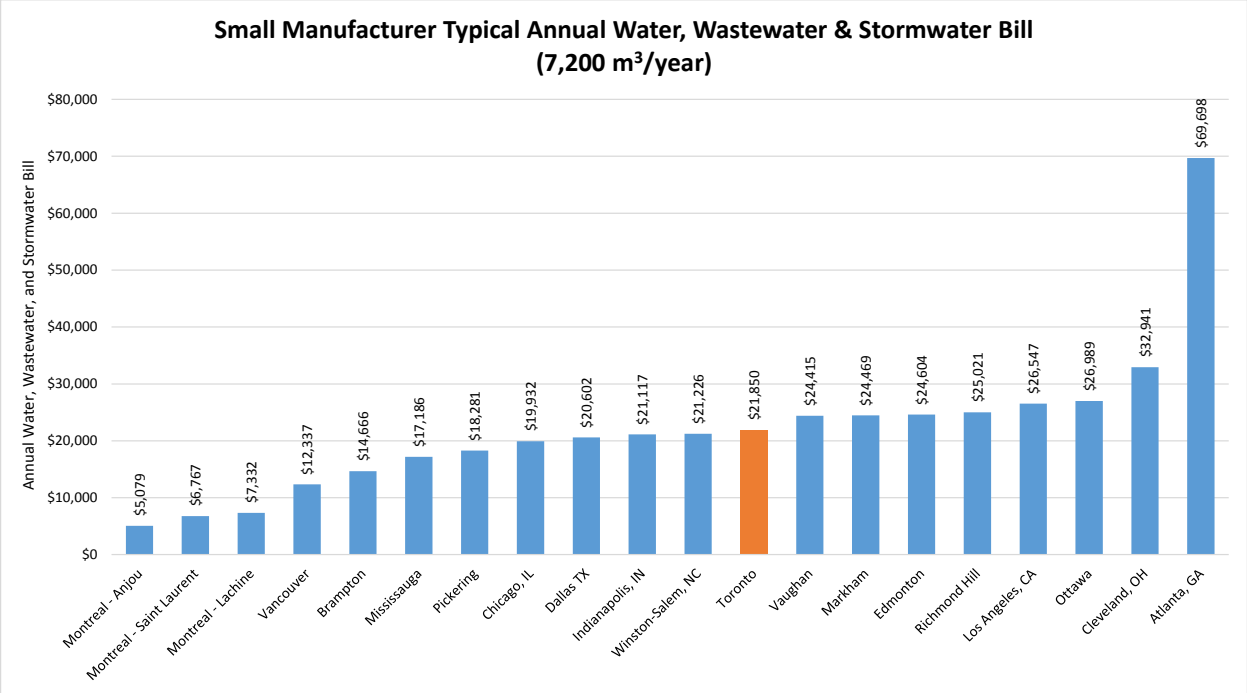


Figure 4-2: Medium Sized Manufacturer

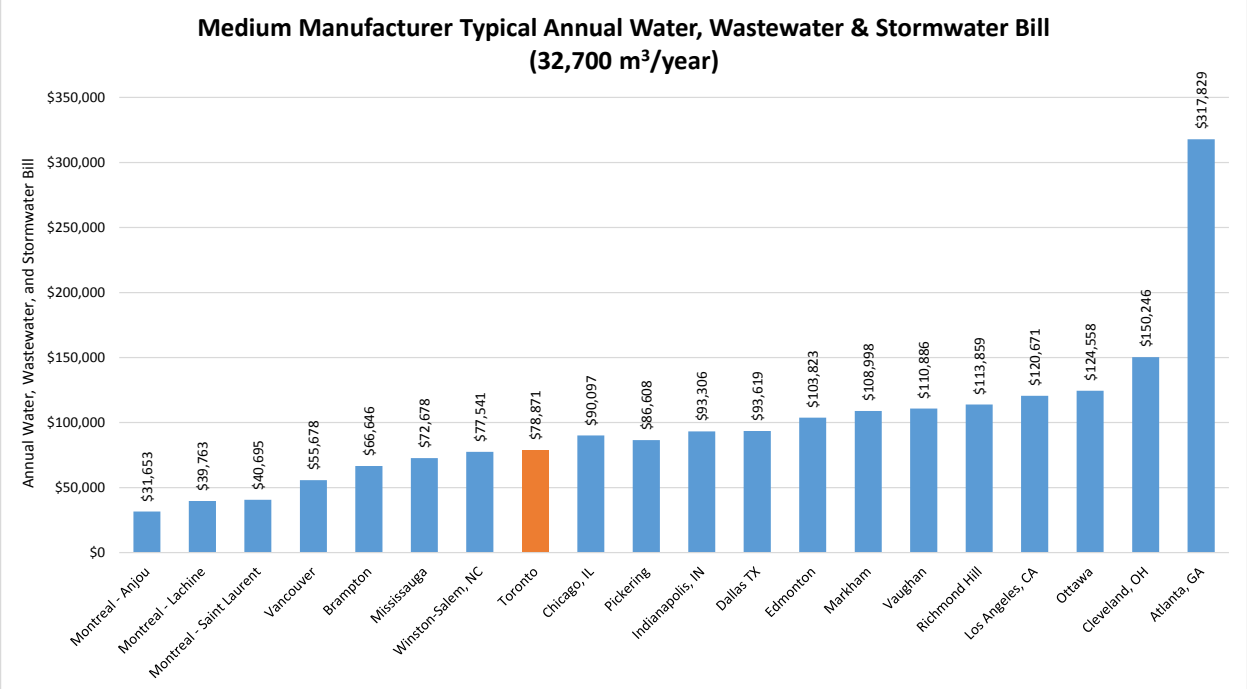
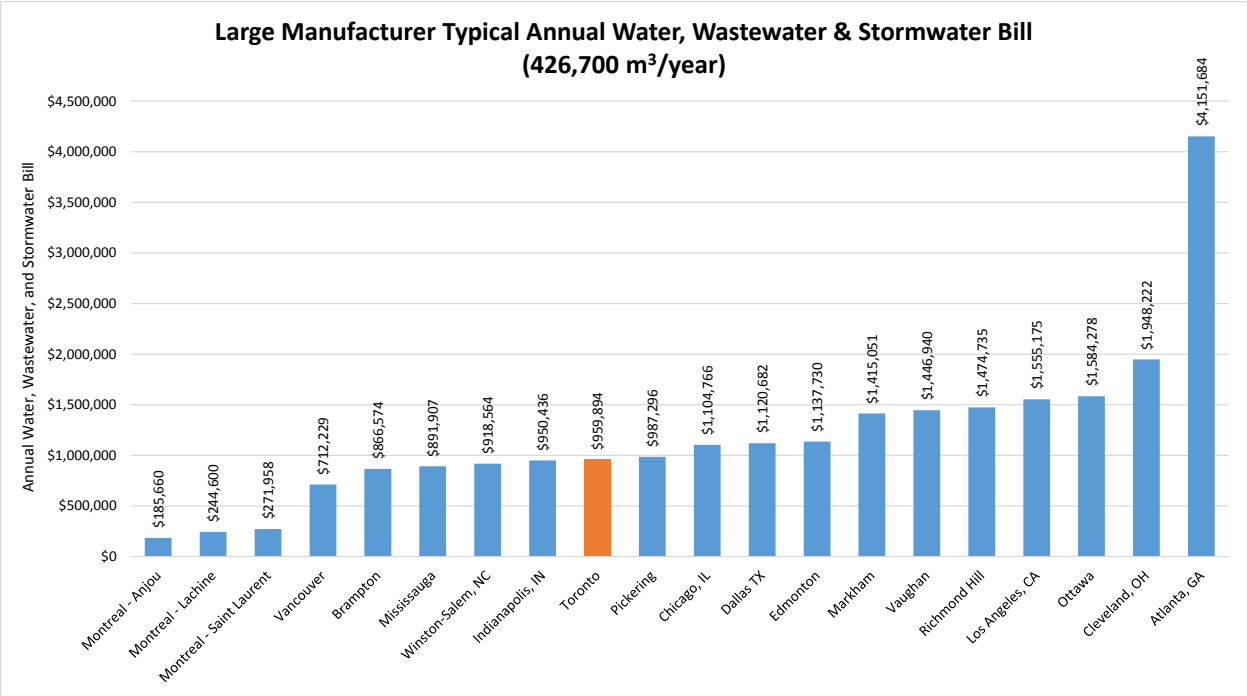


Figure 4-3: Large Sized Manufacturer



As noted above, the three boroughs of Montreal consistently rank as the lowest cost jurisdictions and Atlanta ranks as the highest cost jurisdiction. Atlanta has a significantly higher combined total bill because of higher rates currently imposed to recover the costs of the $4 billion Clean Water Atlanta Initiative. This initiative is a federally mandated overhaul of the City's aging and deteriorating sewer systems.[1] Montreal's boroughs of Anjou, Lachine, and Saint Laurent, have significantly lower bills than the comparators. This is due, in part, to the costs of water services being subsidized through provincial taxes. As noted earlier, we were unable to obtain benchmark corporate pre-tax net income to include the relative provincial income taxation cost share in the comparisons above.

Table 4-1 provides a summary of the City's ranking of water, wastewater and stormwater service costs for the three industrial manufacturing Case Studies. The rankings are provided in ascending order, with 1 representing the most cost competitive jurisdiction. Toronto's overall North American competitive position improves as water consumption increases from 7,200m^3/year to 32,700m^3/year. However, as water consumption increases to 426,700m^3/year under the large manufacturing category

[1] Source: http://www.atlantawatershed.org/customer-service/rates/

Toronto's position declines slightly. Toronto's competitive ranking with the GTA and Canada is comparable to median for each Case Study.

Table 4-1: Toronto's Relative Rankings for Water, Wastewater, and Stormwater Bills

	GTA	Canada	North America
Number of Comparators*	**7**	**13**	**20**
Small Manufacturer	4th	8th	12th
Medium Manufacturer	3rd	7th	8th
Large Manufacturer	3rd	7th	9th

*Includes Toronto

4.2 Property Taxes

Analysing the property tax bills, adjusted for the portions attributable to water, wastewater and stormwater services as per the methodology in Section 2.3.2, this study provides perspective on the cost competitiveness of Toronto relative to the comparator municipalities.

Figure 4-4 summarizes the typical annual property tax bills for small industrial manufacturing operations occupying a 13,130 square foot facility. In this survey of annual property tax costs, the City of Toronto would rank 16th out of the 20 jurisdictions at an annual cost of $50,660. The highest cost jurisdiction in terms of property taxes is the City of Atlanta at $107,991 and the lowest cost jurisdiction is Cleveland at $5,761.

For medium sized industrial manufacturers occupying a 95,790 square foot facility (Figure 4-5), the City's competitive position improves to a ranking of 9th position at a total annual cost of approximately $177,276. This ranking is one position better, and $12,328 less expensive, than the median of Montreal (St. Laurent borough). Property tax bills faced by typical medium manufacturers are highest in Vancouver and lowest in Winston-Salem, at $281,140 and $61,338 respectively.

Large manufacturers occupying a 397,120 square foot facility are presented in Figure 4-6. The annual costs of property taxes range from $231,085 in Cleveland to $1.93 million in Los Angeles. The City of Toronto ranks 10th out of the 20 jurisdictions at $643,748 annually, representing the median municipality in the survey.

Figure 4-4: Total Annual Property Tax Bill for a Small Manufacturer

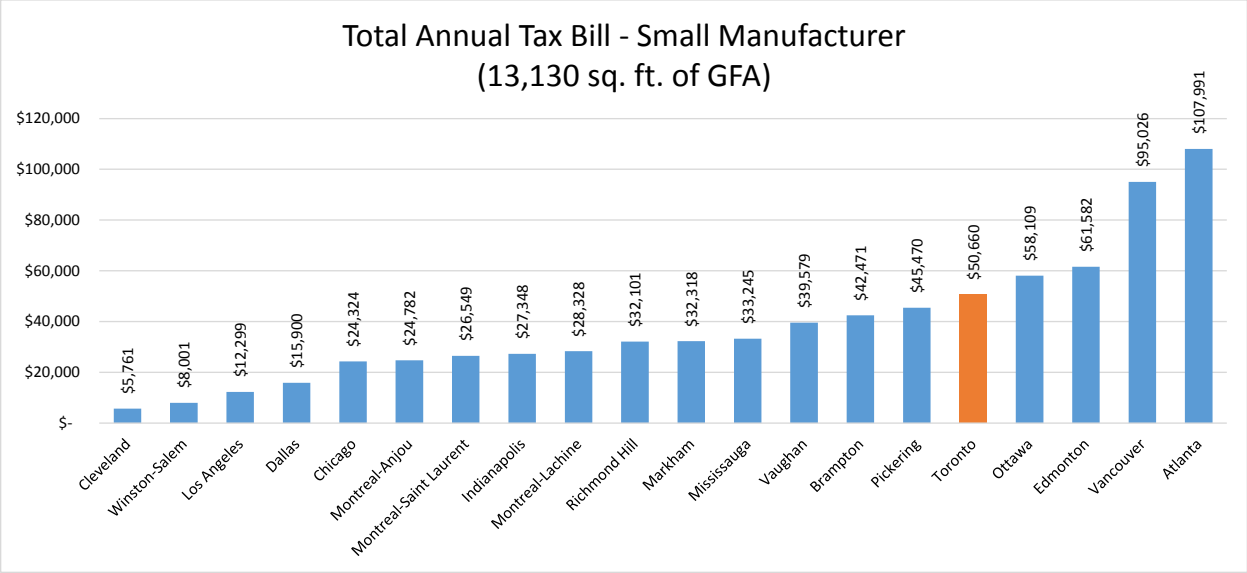


Figure 4-5: Total Annual Property Tax Bill for a Medium Manufacturer

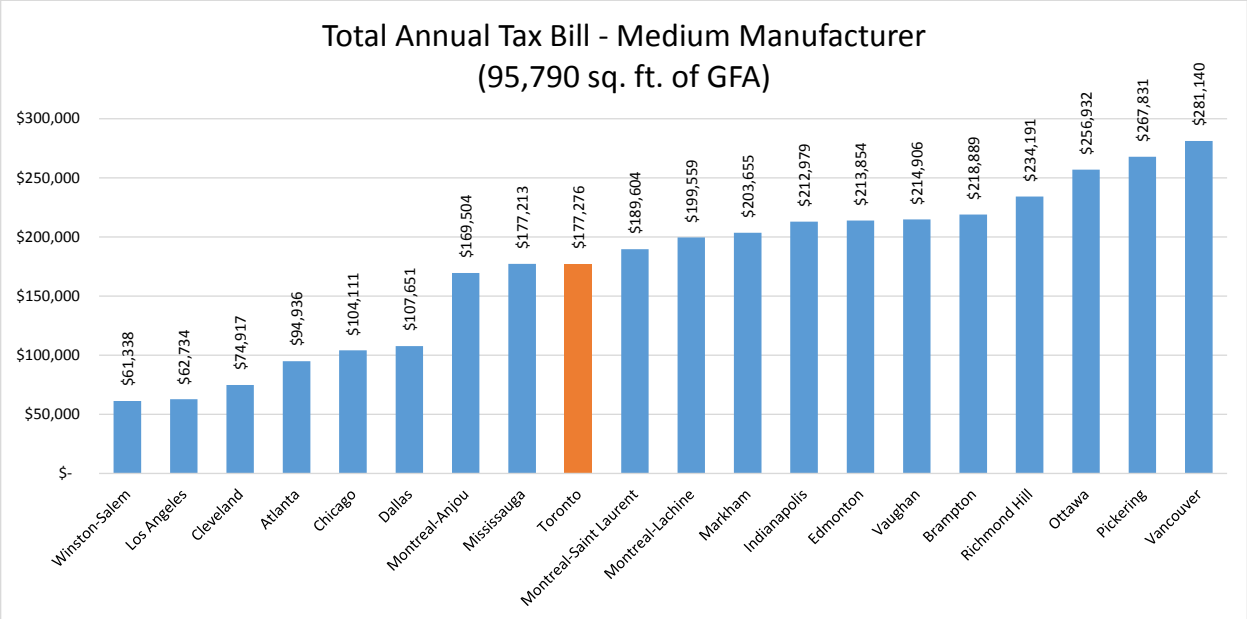
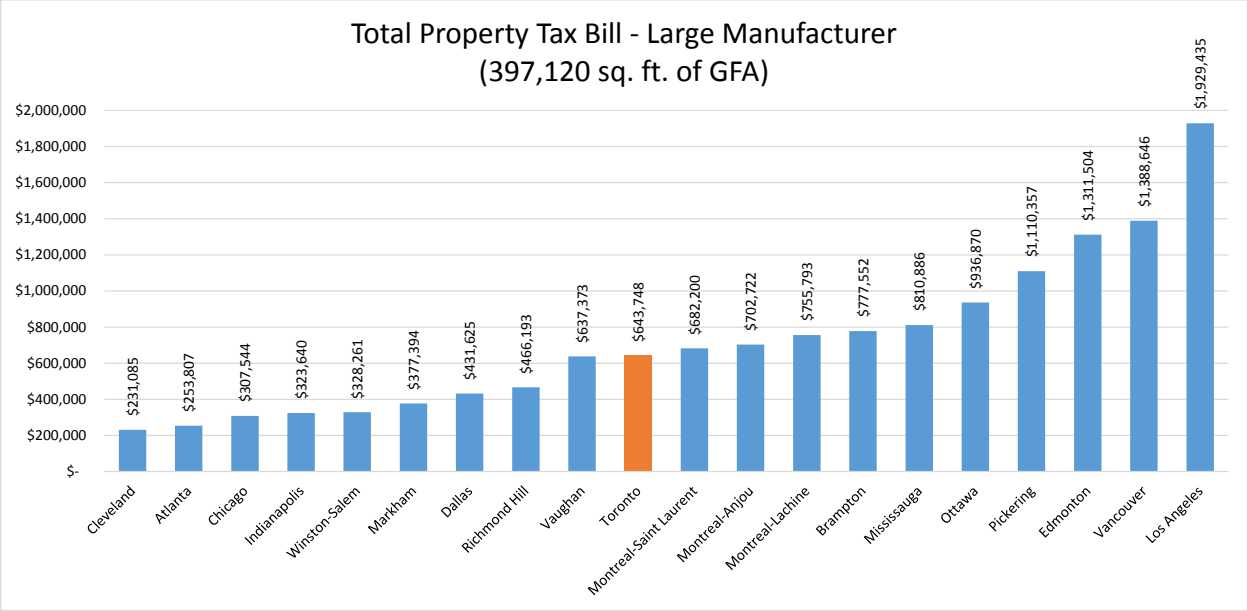


Figure 4-6: Total Annual Property Tax Bill for a Large Manufacturer



With a few exceptions, the U.S. comparator municipalities tend to rank as the lower cost jurisdictions for property taxes. Atlanta has a high property tax bill for the small manufacturing category due to the higher assessment per square foot of building GFA observed in this category. Similarly, Los Angeles has a much higher assessment per square foot of building GFA for the large manufacturer category, which is why the ranking of Los Angeles for a large manufacturer is much worse relative to the ranking of Los Angeles for small and medium manufacturers. These differences in assessment per square foot are a product of the data observed in our samples. Expanded sampling may service to validate these assumptions.

Table 4-2: Toronto's Relative Rankings for Property Tax Bills

	GTA	Canada	North America
Number of Comparators*	**7**	**13**	**20**
Small Manufacturer	7th	10th	16th
Medium Manufacturer	2nd	3rd	9th
Large Manufacturer	4th	4th	10th

*Includes Toronto

Table 4-2 provides a summary of the City's ranking of annual property taxation costs for the three industrial manufacturing Case Studies. Toronto's overall North American competitive position with respect to property taxes improves as facility size increases

from 13,130 square feet to 95,790 square feet. However, similar to water, wastewater and stormwater costs, as facility size increases further to 397,120 square feet under the large manufacturing category, Toronto's position declines slightly. Toronto's competitive ranking within the GTA varies, with Toronto being highest cost jurisdiction for the small manufacturing Case Study, median jurisdiction for the large manufacturing Case Study, and second most competitive cost jurisdiction for the medium manufacturing Case Study. Within Canada, Toronto is in a relative positioning is similar to that witnessed within the GTA across the three Case Studies.

4.3 Electricity Costs

As previously noted in Section 2.3.3, electricity costs are assumed to be mostly homogeneous within the GTA. As such, comparisons are not provided for each GTA lower tier municipality to avoid redundancy.

Figure 4-7 summarizes the typical annual electricity bills for small industrial manufacturing operations consuming 922 MWh of electricity annually. In this survey of annual electricity costs, the City of Toronto would rank 9th out of the 12 jurisdictions at an annual cost of $120,598. The highest cost jurisdiction in terms of electricity costs is the City of Los Angeles at $166,245 and the lowest cost jurisdiction is Winston-Salem at $90,801.

For medium sized industrial manufacturers consuming 4,522 MWh of electricity annually (Figure 4-8), the City's competitive position improves to a ranking of 8th position at a total annual cost of approximately $464,409. This ranking is two positions worse, and $18,169 more expensive, than the median municipality of Cleveland. Los Angeles and Montreal are still the highest and lowest cost jurisdictions for these services at $708,612 and $355,881 respectively.

Large manufacturers consuming an estimated 55,711 MWh of electricity annually are presented in Figure 4-9. The annual costs of service range from $2.88 million in Montreal to $8.12 million in Los Angeles. The City of Toronto ranks 6th out of the 12 jurisdictions at $5.14 million annually, representing the median municipality in the survey. It is noted that due to data limitations, as identified in Section 2.3.3, the annual costs for large manufacturers may be somewhat overstated in the case of the U.S. jurisdictions. This is a result of insufficient data for comparable high-usage customers in U.S. jurisdictions. However, given that the overall ranking of Toronto is generally consistent with what is observed for small and medium manufacturers these figures would appear to be reasonable.

Figure 4-7 Annual Electricity Bill for a Small Manufacturer

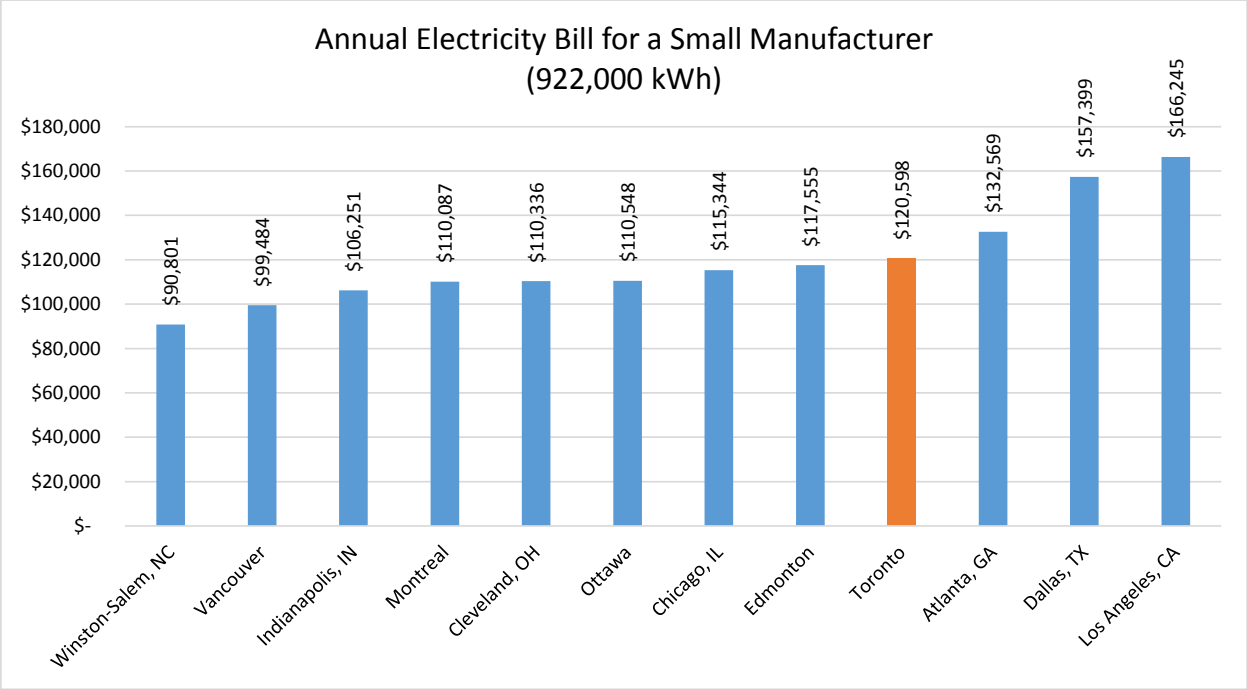


Figure 4-8 Annual Electricity Bill for a Medium Manufacturer

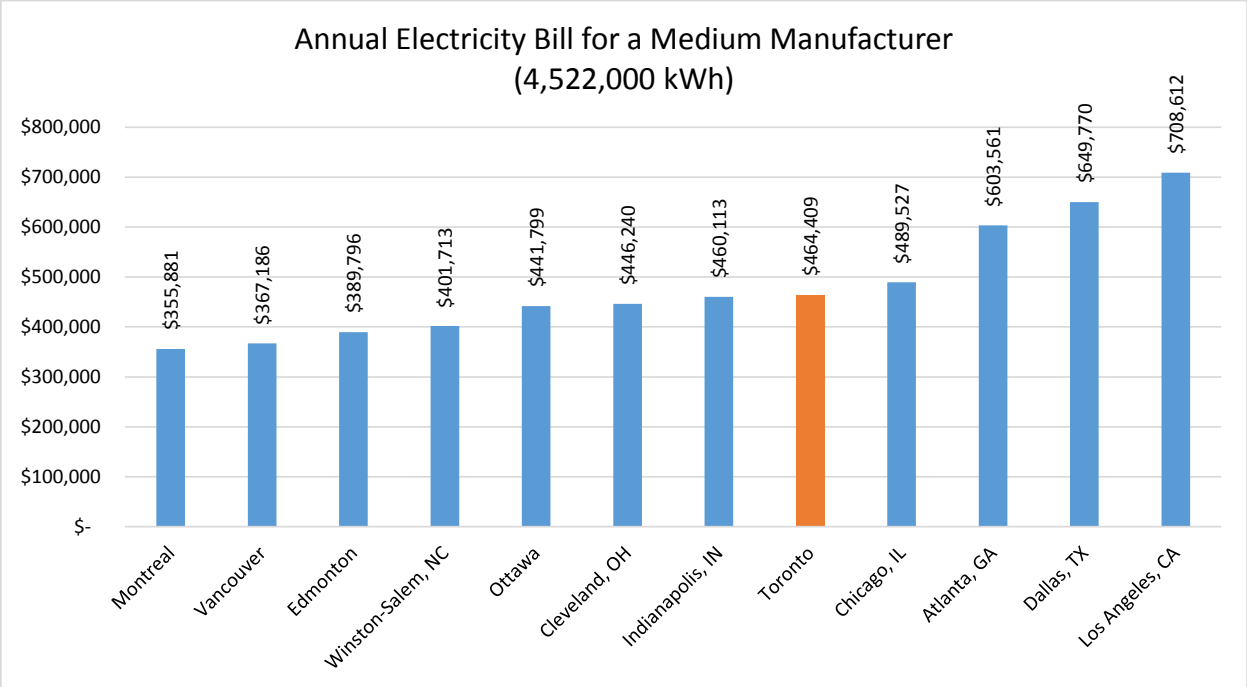


Figure 4-9 Annual Electricity Bill for a Large Manufacturer

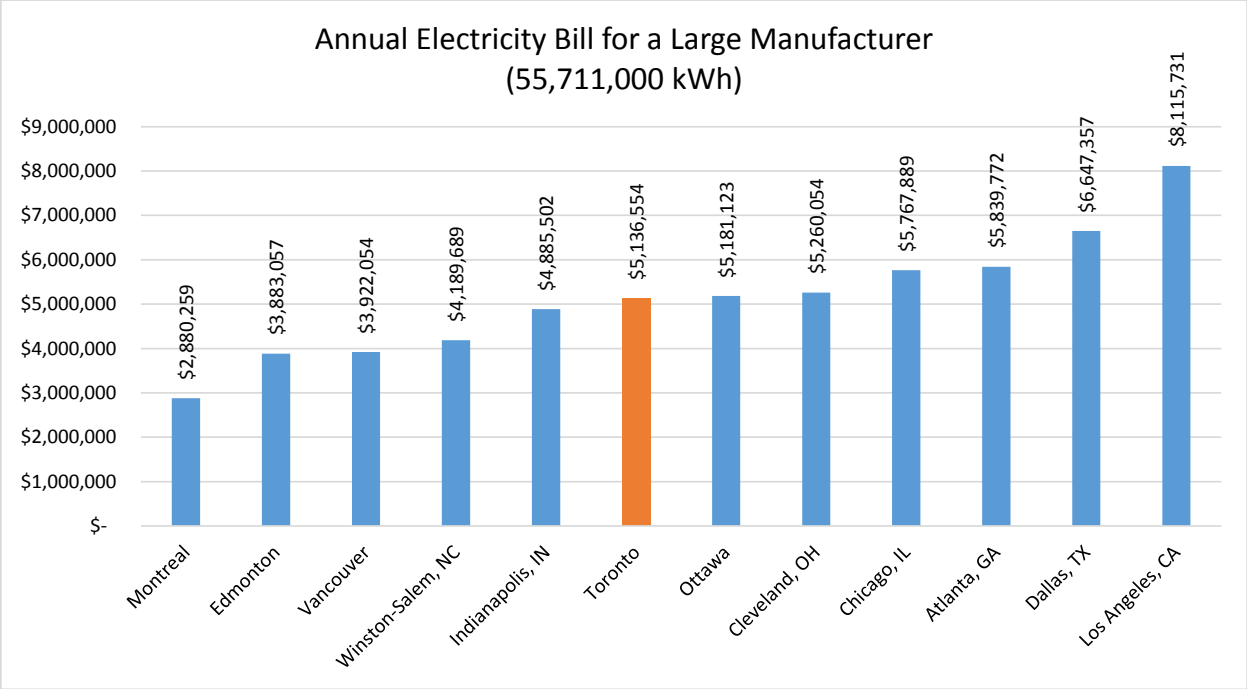


Table 4-3 provides a summary of the City's ranking of electricity service costs for the three Case Study industrial manufacturing operations. Toronto's overall North American competitive position improves as electricity consumption increases. With respect to its ranking within Canada, Toronto ranks as the highest cost jurisdiction for electricity costs amongst surveyed municipalities (second highest for the large manufacturer Case Study).

Table 4-3 Toronto's Relative Rankings for Electricity Bills

	Canada	North America
Number of Comparators*	**5**	**12**
Small Manufacturer	5th	9th
Medium Manufacturer	5th	8th
Large Manufacturer	4th	6th

*Includes Toronto

4.4 Natural Gas Costs

Similar to electricity costs, natural gas costs are interpreted more broadly, namely at the provincial/state level. This is in part due to data availability for the U.S. jurisdictions (see Section 2.3.4 for more detail) and partially due to the negligible variation in natural gas costs across the GTA. It is noted that, as mentioned in Section 2.3.4, natural gas rates for U.S. jurisdictions are high-level averages for the entire manufacturing sector and do not vary with volume consumed. As such, the annual natural gas bills may be understated for small and medium manufacturers in the U.S. jurisdictions.

Figure 4-10 summarizes the annual costs of natural gas services for small industrial manufacturing operations consuming 280,000m^3 of natural gas annually. In this survey of annual costs, Ontario would rank 6th out of the 11 jurisdictions at an annual cost of $74,880. The highest cost jurisdiction for these services is Quebec at $93,013 and the lowest cost jurisdiction is Alberta at $35,640.

For medium sized industrial manufacturers consuming 459,000m^3 of natural gas annually (Figure 4-11), Ontario's competitive position improves to a ranking of 4th position at a total annual cost of approximately $98,541. This ranking is two positions better, and $19,996 less expensive, than the median jurisdiction of Illinois. Quebec and Alberta are still the highest and lowest cost jurisdictions for these services at $152,475 and $56,812 respectively.

Large manufacturers consuming an estimated 18.04 million m^3 of natural gas annually are presented in Figure 4-12. The annual costs of service range from $2.14 million in Alberta to $6.11 million in Quebec. Ontario ranks 2nd out of the 11 jurisdictions surveyed at $2.42 million annually.

Figure 4-10 Annual Natural Gas Bill for a Small Manufacturer

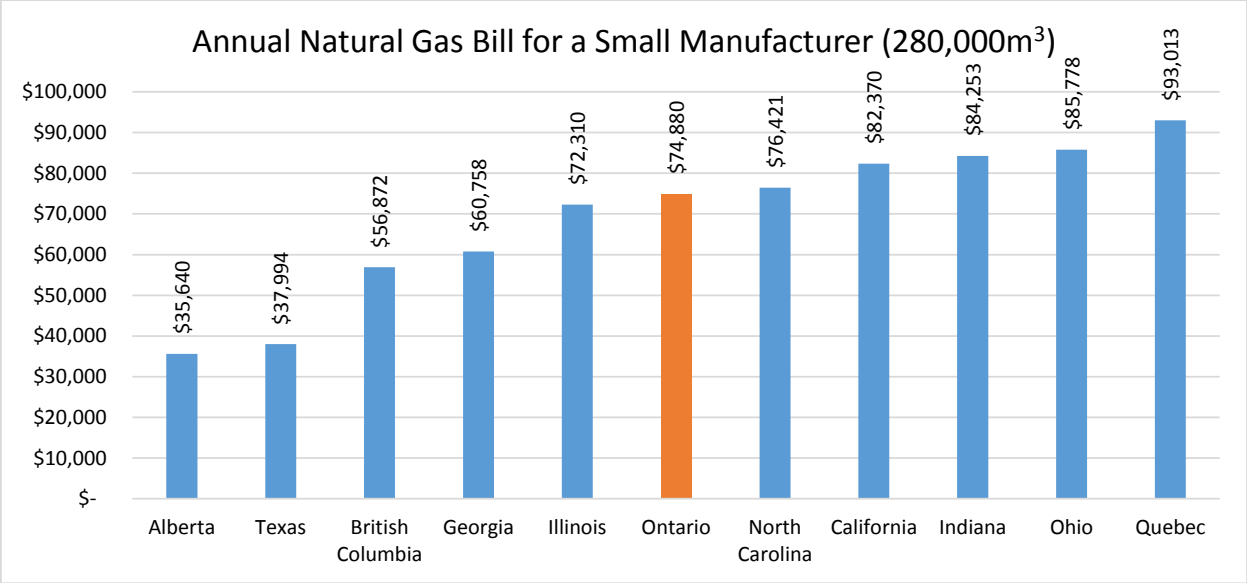


Figure 4-11 Annual Natural Gas Bill for a Medium Manufacturer

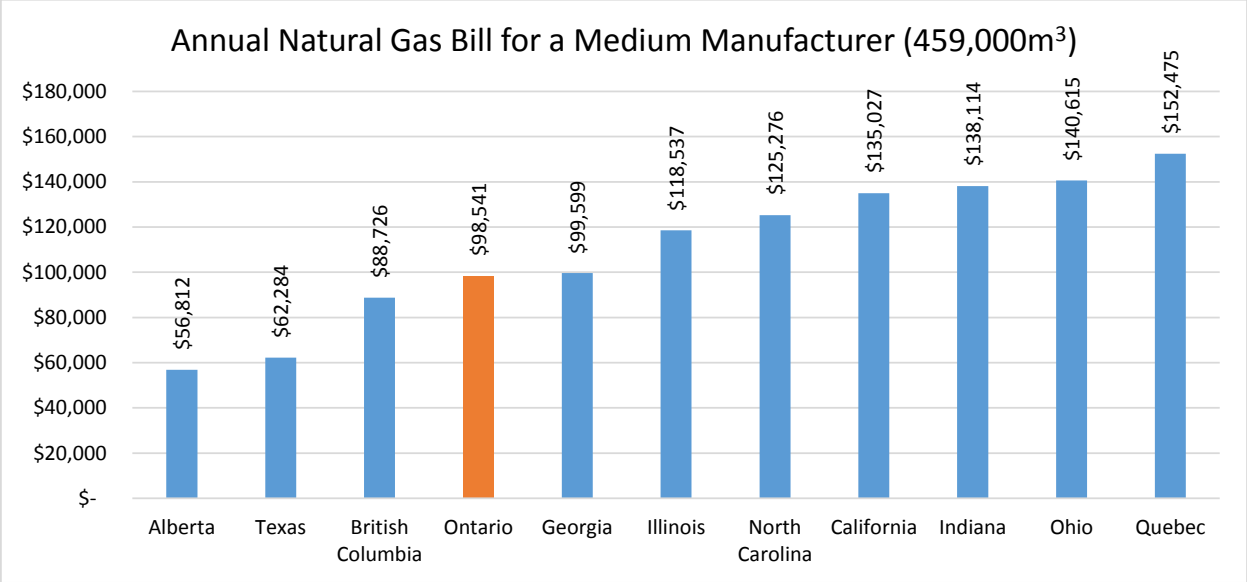


Figure 4-12 Annual Natural Gas Bill for a Large Manufacturer

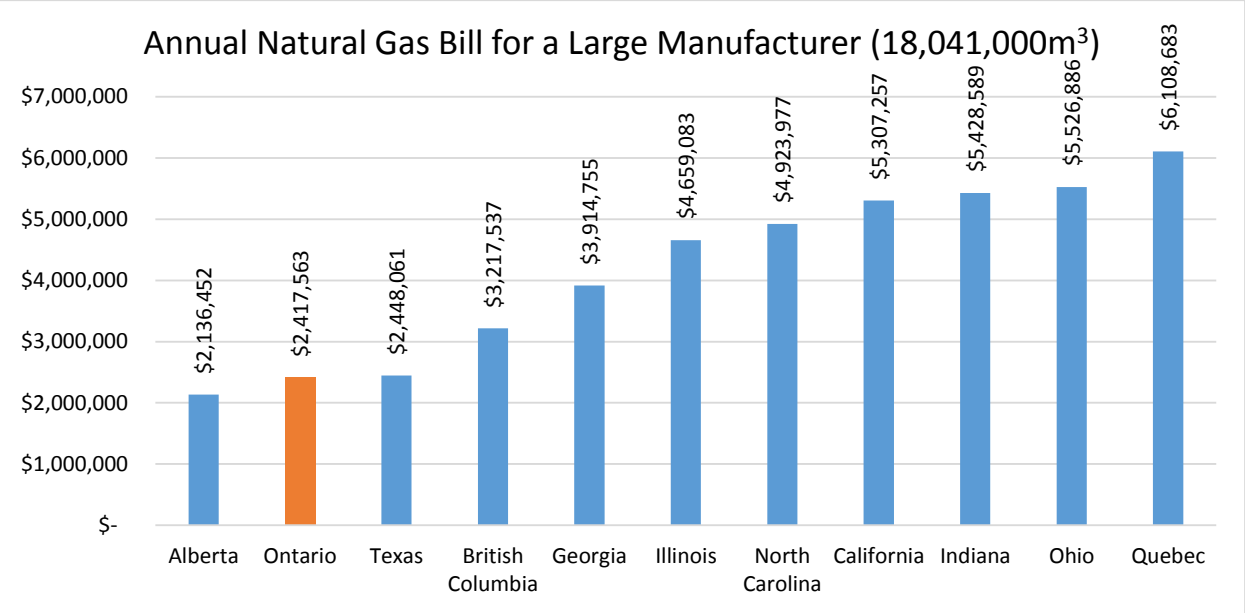


Table 4-4 provides a summary of the Ontario's ranking of natural gas service costs for the three Case Study industrial manufacturing operations. Ontario's overall North American competitive position improves as natural consumption increases, from a median position for small Case Study manufacturers to the second most cost-competitive jurisdiction within the large Case Study manufacturers.

Table 4-4 Ontario's Relative Rankings for Natural Gas Bills

	Canada	North America
Number of Comparators*	**4**	**11**
Small Manufacturer	3rd	6th
Medium Manufacturer	3rd	4th
Large Manufacturer	2nd	2nd

*Includes Ontario

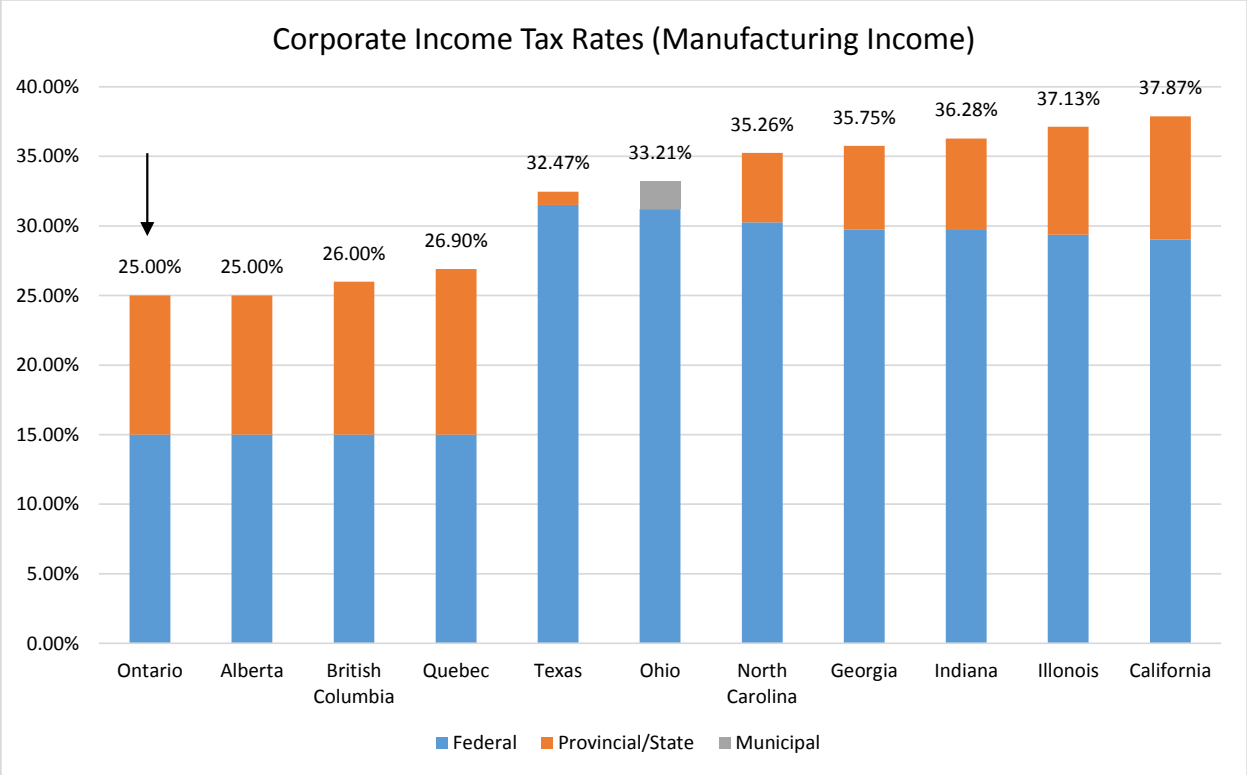
4.5 Corporate Income Tax

As noted in Section 2.3.5, no information was provided by survey respondents on pre-tax net income levels to inform benchmark charging parameters for corporate income tax costs. As such, a comparison of annual corporate income tax bills was not possible, and instead, a comparison of corporate income tax rates is provided in Figure 4-13

below to inform the City's relative position. Canada (and Ontario in particular) is a leader in this regard amongst the comparator jurisdictions. However, as noted in a report by the Manufacturing Competitiveness Committee of the Canadian Automotive Partnership Council,

> "the effect of Canada's low corporate tax rate vis-à-vis the U.S. can be muted. That's because U.S. companies earning income in Canada are subject to U.S. taxes. Canadian taxes paid are credited against U.S. corporate taxes owing, effectively eliminating the effect of Canada's low corporate tax rates for those companies." (Canadian Automotive Partnership Council, 2013)

Figure 4-13 Comparison of Corporate Income Tax Rates



4.6 Total Annual Costs

The preceding sections analyzed the cost-competitiveness of Toronto on a service by service basis. However, in order to gain an understanding of the overall cost competitiveness, the costs of all of these services need to be considered at an aggregated level. This section provides an overview of Toronto's cost competitiveness with respect to the other comparator municipalities when all service costs are considered.

Small Industrial Manufacturing Case Study

Figure 4-14 summarizes the total annual costs of all services considered in this Study for small industrial manufacturing operations. In this survey of annual costs, Toronto would rank 17th out of the 20 jurisdictions at an annual cost of $267,988. The highest cost jurisdiction when considering all costs is the City of Atlanta at $371,016 (approximately 28% higher than Toronto) and the lowest cost jurisdiction is Winston-Salem at $196,450 (approximately 27% lower than Toronto).

For the City of Toronto the costs of water, wastewater and stormwater services represent 8% of the total annual costs of service; property taxes represent 19% of total annual costs; electricity costs represent 45%, and natural gas costs represent 28%. For small industrial manufacturing operations in Toronto, approximately 18% of the total annual operating costs fall within the City's jurisdiction (i.e. water, wastewater, and stormwater charges and municipal property taxes – exclusive of education property taxes).

Medium Industrial Manufacturing Case Study

For medium sized industrial manufacturers (Figure 4-15), Ontario's competitive position improves to a ranking of 10th position at a total annual cost of approximately $819,097. This ranking representative the median of surveyed municipalities. Similar to the small industrial manufacturing Case Study, the cities of Atlanta and Winston-Salem represent the highest and lowest cost jurisdictions overall, at $1.16 million (approximately 29% higher than Toronto) and $665,868 respectively (approximately 19% lower than Toronto).

City of Toronto relative cost shares attributable to water, wastewater and stormwater services, property taxes, electricity, and natural gas are 10%, 22%, 56%, and 12%, respectively. For the medium industrial manufacturing operations in Toronto, approximately 21% of the total annual operating costs fall within the City's jurisdiction (i.e. water, wastewater, and stormwater charges and municipal property taxes).

Large Industrial Manufacturing Case Study

Total annual costs for large manufacturers are presented in Figure 4-16. The annual costs of service range from $8.47 million in Alberta to $16.91 million in Los Angeles. At an annual cost of $9.16 million annually, Toronto ranks as the second most cost competitive market out of the 20 jurisdictions. This places Toronto's total costs approximately 46% lower than the City of Los Angeles and 8% higher than Alberta.

Toronto's relative cost shares attributable to water, wastewater and stormwater services is 10%, property taxes account for 7%, electricity costs 57%, and natural gas 26%. The share of total annual costs falling within the City's jurisdiction for the large industrial manufacturing Case Study is 14%.

Figure 4-14: Total Annual Service Costs for a Small Industrial Manufacturer

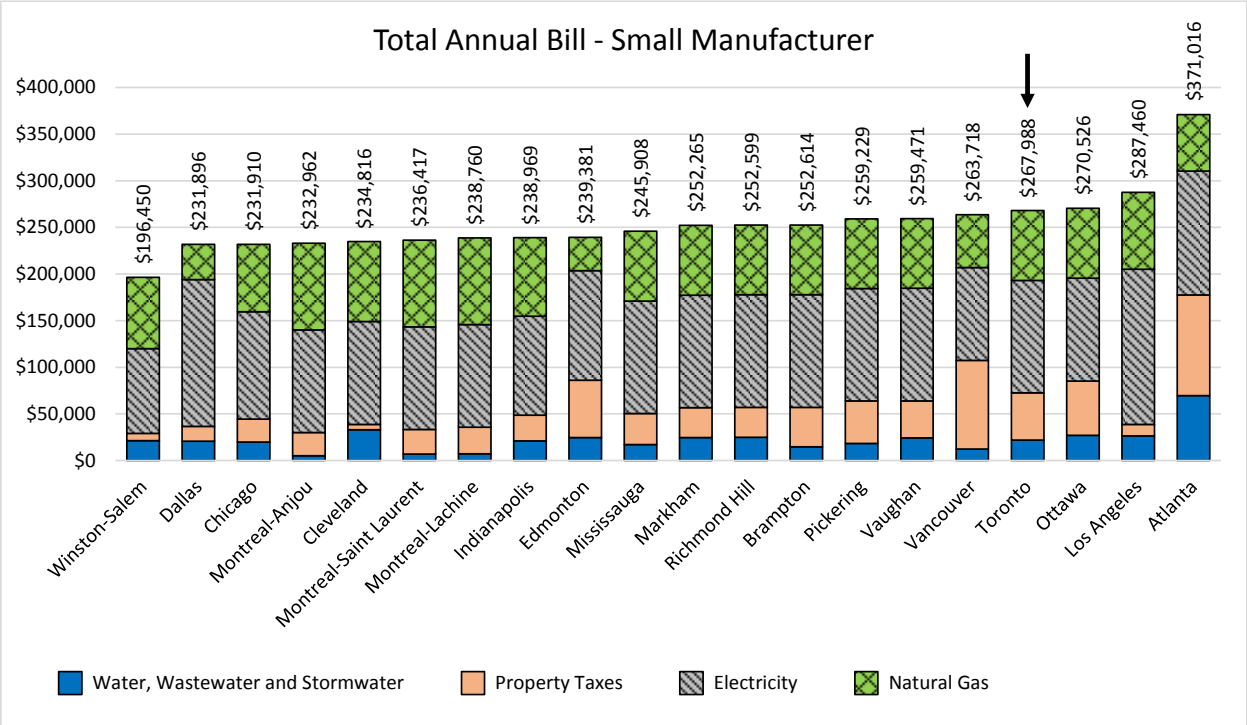


Figure 4-15: Total Annual Service Costs for a Medium Industrial Manufacturer

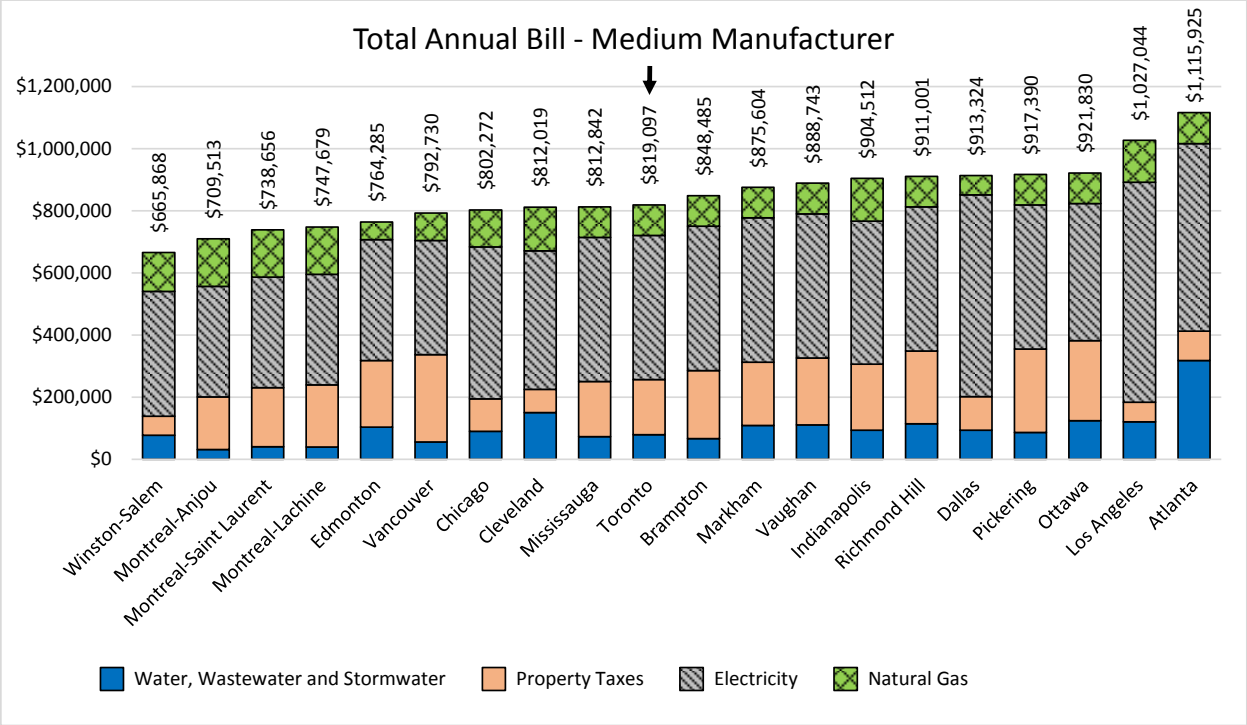


Figure 4-16: Total Annual Service Costs for a Large Industrial Manufacturer

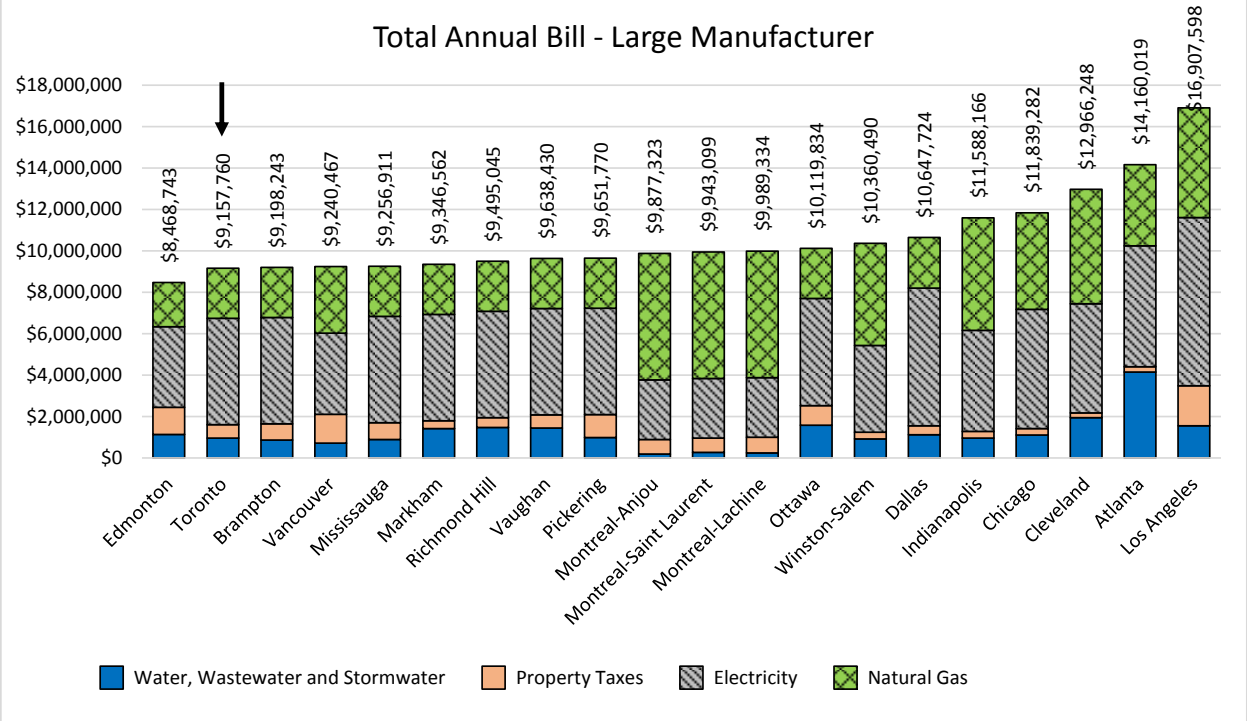


Table 4-5 provides a summary of Toronto's relative ranking of total annual costs for services considered within this Study for the three industrial manufacturing Case

Studies. The rankings are provided in ascending order, with 1 representing the most cost competitive jurisdiction. Toronto's competitive position improves with the size of the manufacturer within Canada and also more broadly within North America. For small industrial manufacturers Toronto ranks as one of the most costly jurisdictions amongst those surveyed for the annual operating costs, whereas for the large manufacturers Toronto is amongst the most cost competitive municipalities surveyed. This results are generally attributed to a number of factors, including:

- Property assessment per square foot of G.F.A. is relatively large for Toronto's small manufacturers, even when compared to medium and large manufacturers in the City.

- Small manufacturer case study is faced with a relatively large electricity bill, which is not as pronounced for medium and large case studies due to falling unit prices of electricity at higher consumption levels. Similar effects are witnessed with respect to the annual costs of natural gas services. Falling unit costs at higher consumption volumes make the medium and large manufacturing case studies more cost competitive amongst the surveyed municipalities.

- Toronto's water/wastewater/stormwater costs are relatively competitive for all three manufacturing Case Studies, but because these costs represent a relatively small portion of the total annual costs, they have a limited impact on Toronto's overall competitive position.

Table 4-5 Toronto's Relative Rankings for Total Annual Bills

	GTA	Canada	North America
Number of Comparators*	**7**	**13**	**20**
Small Manufacturer	7th	12th	17th
Medium Manufacturer	2nd	7th	10th
Large Manufacturer	1st	2nd	2nd

*Includes Toronto

5. Impact Assessment of Alternative Pricing for Water Services (Phase 2)

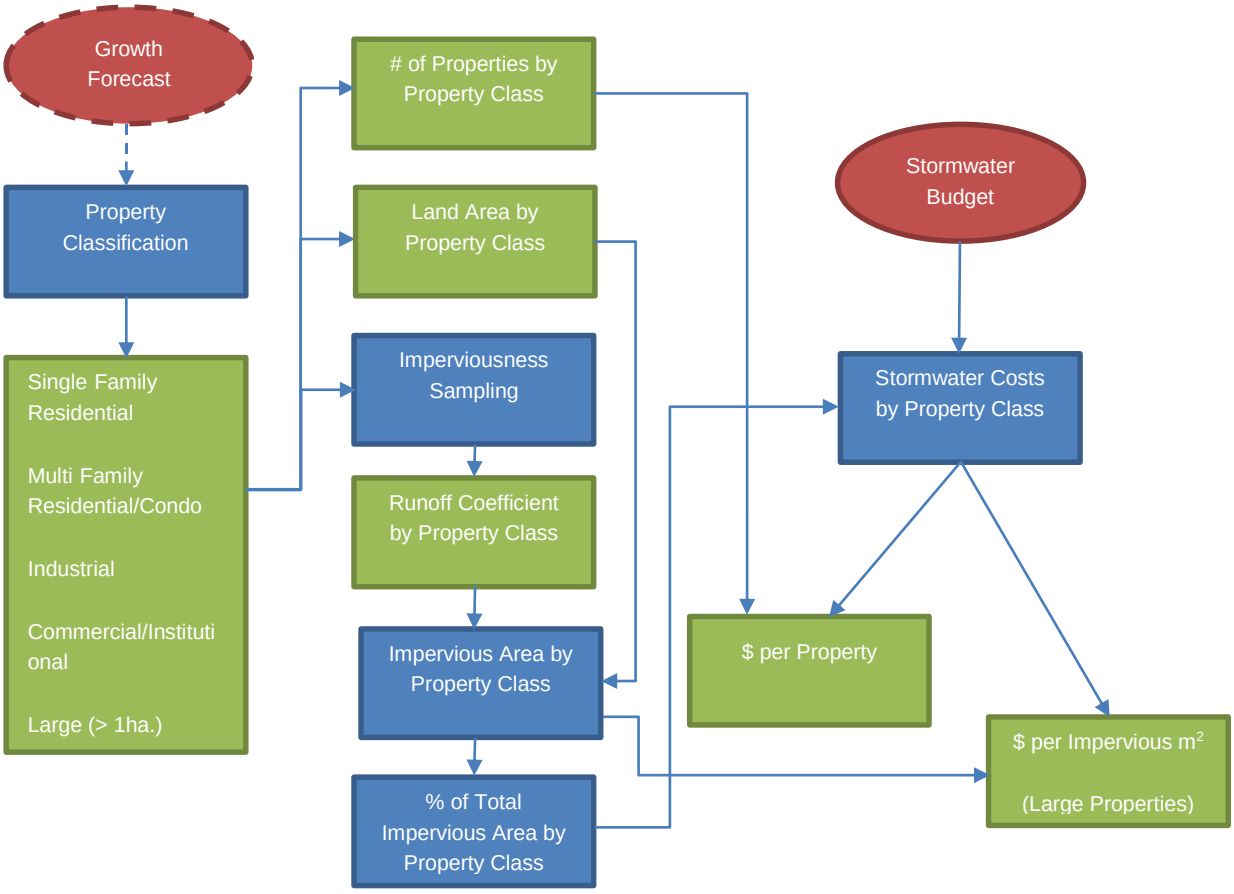
As part of this Study the City requested a peer review of two scenarios developed relating to charging for water and wastewater services (including stormwater services). The first scenario considered is the Status Quo, i.e. maintaining the City's current combined water and wastewater rate to support water supply, wastewater treatment and stormwater management. The second scenario considers the introduction of a separate stormwater charge for the recovery of capital project costs associated with stormwater management. Watson reviewed the City's model for calculating the stormwater services charge, and also undertook an assessment of the impacts of the two financial scenarios on the industrial manufacturing Case Studies.

5.1 Peer Review of Toronto's Stormwater Charge Model

The City of Toronto has developed a MS Excel-based model to calculate a potential stormwater charge. Following a thorough review of the model's functionality and assumptions, Watson prepared a diagrammatical representation of the method utilized by the City in estimating a potential stormwater charge. This diagrammatical representation is illustrated by Figure 5-1, and a brief commentary on the various components is provided below.

Properties are classified into five property classes and the total land area within each property class is determined. Runoff coefficients are then applied to the total land area within each property class in order to estimate the impervious area within each of the property classes. Runoff coefficients used are established by sampling properties within each property class to determine the relative share of impervious area. Runoff coefficients measure the proportion of rainwater that runs off a property as a result of not being able to absorb into the ground. Thus, property classes that tend to have larger building footprints or large paved areas relative to the parcel size have higher runoff coefficients, reflective of the fact that they generate more runoff. The more runoff a property generates, the larger the cost it imposes on the municipal stormwater system.

Figure 5-1 Graphical Representation of Toronto's Stormwater Charge Calculation Methodology



Within the model, the net costs of the stormwater service (as determined by the City's stormwater budget) are recovered from the various property classes based on the relative share of the City's total impervious area within each property class. Finally, the share of costs to be recovered from a particular property class is divided by the number of properties within that property class to come up with a flat charge per property. An exception to this is the "Large" property class, comprised of properties greater than one hectare. In this case, the share of costs to be recovered from the large property class is divided by the actual impervious land area to come up with a charge per impervious square meter. This charge would be imposed on each property based on their actual measured impervious area.

Based on Watson's experience assisting a number of Ontario municipalities with similar assignments, we believe that the City's method for calculating a potential stormwater rate is reasonable. We would note, however, that the current method does not take into account any growth projections for the City, whereby the impervious area may be altered. Growth in the City's population and employment will result in intensification of

presently developed areas, and to a lesser extent additional development in undeveloped areas. These factors would tend to change the imperviousness characteristics, and may result in a shift of land from one property class to another over time (e.g. a shift from single-family residential category to multi-family residential/condo category). While this does not require specific modeling, reviewing the fees periodically to account for these adjustments would be prudent.

5.2 Assessment of Charging Mechanism

Creating a rational relationship (nexus) between the stormwater management services and the manner in which they are funded is foundational to creating a stable, legally defensible, equitable and adequate funding strategy. In assessing the potential of a user fee as a primary revenue source for stormwater services, the evaluation of data and the selection of a preferred rate methodology is a critical step in choosing an equitable way to distribute stormwater fees across a community.

5.2.1 Alternative Funding Models

Rates in their simplest form can be defined as total costs to maintain the utility function divided by the total expected volume to be generated for the period. An important question with respect to stormwater rates is identifying the expected volume that most closely relates to benefits of service provided. In this regard, there are several approaches which have been used by Ontario municipalities and municipalities in other provincial and state jurisdictions. A brief commentary is provided for each type of rate structure:

Property Taxes – predominant approach used by most municipalities throughout Ontario. The net needs for the service are added to the tax levy and recovered from properties based on the assessed value of each property. Under this approach there is no apparent relationship between the benefits of service received by a property and the basis for paying the cost for the service, other than presumed ability to pay.

Flat Rates – Generally, the total cost for the service is divided by the number of properties to provide a "per property" charge. The rate may be varied by type of user to denote some variation in the service received (e.g. modification for non-permeable land area). Dependent on the use of service benefit factors to modify flat rates, the level of service received and cost of service may provide limited correlation.

Land Area – Generally, stormwater rates recognize a relationship between the volume of water which may be derived from the land and the size of the property. While area is

a key factor for the amount of rainfall on the properties, this approach does not directly reflect the rate at which the water migrates from the property into the municipal storm system. To better reflect this benefit, land area would need to be modified by run-off coefficient assumptions.

Utility Rate – this approach imposes a fee for service based upon the metered volumes of water consumed through water meters. While this approach recognizes volume of water consumption variations, there is no direct relationship between the stormwater service received by a property and the basis for imposing the fee. Note that where a municipality has a large portion of combined storm sewers and sanitary sewers, municipalities have added the storm costs to the wastewater costs and recovered this service in a similar manner. Also, as rural or private service customers may not have municipal water meters, flat charges would have to be developed for full rate implementation.

Run-off Coefficient – The percentage of rainfall that migrates as stormwater run-off from a property (or surface) is called the run-off coefficient. These coefficients are used by engineers as part of a formula for calculating the amount of run-off from a property. Generally very grassy, vegetated lands have a low run-off coefficient whereas lands with large amounts of hard surfaces (parking lots, buildings, etc.) have a high run-off coefficient. This approach would provide a calculation which takes the size of the property and an estimated speed at which a volume of stormwater migrates into account for imposing the charge. Under this approach a run-off coefficient could be developed for various property classes and imposed on a property specific basis (as opposed to a flat rate basis) based on the constituents land area and calculated impervious area.

Impervious Area of the Properties – very similar to the run-off coefficient approach however it is based on the actual measured (or sampled) amount of imperviousness for each property. To undertake this rate structure, very detailed analysis of each property must be undertaken by GIS and aerial mapping measurements.

A comparison of municipal stormwater rate structures in the context of Ontario is provided in Figure 5-2.

Figure 5-2 Municipal Comparison - Stormwater Rate Structures

Municipality	Stormwater Rate Based Recovery	Stormwater Rate Based Recovery Review Complete but not Implemented at Present	Type of Rate Based Structure	Rate Categories	Billing
Aurora	✓		Flat Rate Charge per Unit	Residential and condominium properties Non-residential and multi-residential properties	Water bill
Kitchener	✓		Tiered Flat Fee (based on property type and size of impervious area)	10 residential categories 6 non-residential categories	Monthly utility bills
Waterloo	✓		Flat Rate per Property (by property type & size)	3 residenital categories & 3 multi-residential categories 3 institutional categories & 4 industrial/commercial categories	Water Utility invoice
Hamilton	✓		Utility Rate (based on water consumption)	Residential - 2 tiers (based on monthly consumption) Non-residential	Utility bill (Horizon Utilities)
London	✓		Flat Rate Charge per Property Rate per hectare	Land area 0.4 hectares or less Residential land area 0.4 hectares or less without a stormdrain within 90m Land area above 0.4 hectares	Monthly water bill
St. Thomas	✓		Flat Rate per Property Rate per Hectare	Residential & commercial/institutional under 1,800 m^2 land area Commercial/institutional over 1,800 m^2 land area & all industrial	Monthly utility bill
Markham[1]	✓		Flat Rate Charge per Property	Residential	Tax Bill
		✓	Current Value Assessment	Non-residential	
Richmond Hill	✓		Flat Rate Charge per Property	Residential and farm properties Industrial, commercial, multi-unit, and condominium properties	Water bill[3]
Mississauga[2]		✓	Tiered Flat Fee (based on roofprint area) Rate per m^2 of impervious area (impervious area individually assessed for each property)	5 categories for Single Residential properties Multi-residential & non-residential properties	Region of Peel's utility billing system

[1] Non-residential rates in Markham are anticipated to be implemented in 2016.

[2] All stormwater rates in Mississauga are anticipated to be implemented in 2016

[3] Residents and businesses who are not on Richmond Hill water will be billed annually for the Stormwater Management Rate

5.2.2 Assessment Criteria

Figure 5-3 below provides for the spectrum of charging options for stormwater services and the ranking of each relative to various service criteria as discussed in the previous section and below.

The "ease of calculation" criterion is trying to capture the relative data intensity required to support a given rate calculation. In the presence of good data, any given rate structure can be calculated with relative ease, but the difficulty lies in the ability to obtain and maintain a comprehensive and accurate data source.

"Linkage between Fee Paid and Benefit Derived from Services" measures how closely the fee paid by any given property owner reflects the benefits of service received. Although all City residents benefit from a well-functioning stormwater system, property owners with more impervious areas on their properties produce more stormwater runoff, and hence place higher demands on the City's infrastructure. Under the current funding model utilized by the City, property owners with higher water consumption pay more for stormwater services, even though there is no clear link between water consumption and stormwater service benefits. A more direct linkage between the fee paid and the benefit derived from services is considered desirable, and rate structures that provide this are therefore preferred.

"Cost of Administration" – although a rate structure that is well supported by data and provides a tight relationship between the ultimate fee and benefits received by the person paying them may be more desirable, the costs of administering such a rate structure typically rise. This is an important consideration because any increase in the costs of administering a rate structure would have the effect of diverting funding from actual stormwater system needs. Therefore, the degree that service costs are recovered from benefiting parties needs to be measured by the costs of implementation.

"Users' Control over Charging Mechanism" – this metric considers how much control a property owner has over the amount they have to pay. More control in this regard is considered a positive attribute, and therefore rate structures that provide the property owner with a greater degree of control are ranked higher. Under the current funding model for example, property owners have a relatively high degree of control, since their stormwater bill can be influenced by changing water consumption. On the other hand, under a funding model that charges flat rate per property, the property owner would have little control over the charge for service.

Figure 5-3 Stormwater Funding Approaches

Type of Charge	Rate Options/Basis of Calculation	Ease of Calculation	Linkage between Fee Paid and Benefit Derived from Service	Cost of Administration	Users' Control over Charging Mechanism
Property Taxes	tax rate applied to assesssed value	easy	low	low	medium
Flat Rate per Property	$/property	easy	low	low	low
Utility Rate	$/m^3 of water consumption	easy	low	low	high
Run-off Coefficient by Property Type	$/unit (varied by type)	medium	medium	medium	low
	$/m^3 of water consumption	medium	medium	medium	high
Impervious Area Sampling by Property Type	$/unit (varied by type)	medium	medium	medium	low
	$/m^3 of water consumption	medium	medium	medium	high
Run-off Coefficient by Actual Land Area per Property	$/impervious acre	hard	high	medium/high	medium
Impervious Area Sampling by Actual Land Area per Property	$/impervious acre	hard	high	medium/high	medium
Actual Impervious Area per Property	$/impervious acre	hard	high	high	high

5.2.3 City of Toronto's Approach

Based on our review of the City's model, it appears that the City is considering a combination of a modified flat rate per property (determined based on impervious area characteristics) and actual fee for impervious area for properties larger than one hectare. This approach is reasonable in light of the assessment criteria discussed in Section 5.2.2., providing the City with a funding mechanism that ranks high in its linkage between fee paid and service benefits derived, provides customers with moderate control of service demands, is relatively easy to administer and requires the maintenance of the model and database to produce a verifiable funding plan. Furthermore, such an approach would be within the range of approaches utilized by other Ontario municipalities with stormwater charges.

5.3 Municipal Comparison

Table 5-1 below provides an overview of the stormwater charges currently imposed by Ontario municipalities with dedicated stormwater rates.

Based on the comparison provided in Table 5-1, the preliminary 2018 rates calculated by the City's stormwater model would position the City's stormwater charges as highest amongst the municipalities surveyed, across all three property classes (i.e. single-detached residential, small non-residential, and large non-residential.) It is noted, however, that the comparison in Table 5-1 provides existing (i.e. 2015) charges which may increase by 2018, and therefore does not provide a direct comparison to the City's proposed 2018 rates. Furthermore, it is also noted that if stormwater charges were

introduced, then the City's water rates would decrease by approximately 12%, partially offsetting the relatively high stormwater charges.

Table 5-1 Current (2015) Typical Annual Stormwater Charges in Ontario

Municipality	Residential (Single Detached)	Non-Residential (Small)	Non-Residential (Large: > 10 acres)
Aurora	**$57.34**	**$755.57**	**$755.57**
Markham[1]	**$47.00**	**$409.90** (based on $1,413,445 of current value assessment)	**$8,204.25** (based on $28,290,520 of current value assessment)
Richmond Hill	**$52.38**	**$152.20**	**$152.20**
Kitchener	**$125.76** (Residential Medium - footprint between 106-236m^2)	**$240.60**	**$11,923.44** (based on 30,351 m^2 impervious area)
Waterloo	**$80.88** (Residential - Medium)	**$207.60**	**$7,915.08**
Mississauga[2]	**$100.00**	**$262.17** (based on 700 m^2 impervious area)	**$11,367.57** (based on 30,351 m^2 impervious area)
Hamilton[4]	**$87.01** (265 m^3 annual water consumption & 3/4 inch meter)	**$348.75** (1,000 m^3 annual water consumption & 1 inch meter)	**$1,619.18** (4,706 m^3 annual water consumption & 2 inch meter)
London	**$173.88** ($130.44 if no storm drain within 90m)	**$173.88**	**$14,468.40**
St. Thomas[3]	**$90.72**	**$90.96**	**$12,568.80**

[1] Non-residential rates in Markham are anticipated to be implemented in 2016. Shown rates for non-residential properties have not yet received council approval.

[2] All stormwater rates in Mississauga are anticipated to be implemented in 2016

[3] 2014 Rates

[4] 2015 Combined Wastewater & Stormwater Rates allocated by portion of 2015 Budget

5.4 Impact Assessment

To determine impacts of a potential stormwater fee on the City industrial manufacturing sector, the two funding scenarios were considered. The first scenario maintains the

combined water and wastewater rate to support water supply, wastewater treatment and stormwater management. The second scenario considers the introduction of a stormwater charge in 2018. Under the first scenario, the City's projections show that the combined water/wastewater rate would increase by 8% in 2016, followed by 5% increases in 2017 and 2018. The second scenario is identical to the first scenario until 2018 with the introduction of the stormwater charge imposed at that time. With the introduction of a stormwater charge, the City could be in a position to reduce the combined water/wastewater rate by approximately 11.9%. This occurs as a result of a greater share of the total costs being recovered from other customers based on their relative impervious area demands (i.e. commercial sector). Tables 5-1 through 5-3 and Figures 5-4 through 5-6 below demonstrate the impacts of these two scenarios on Case Study small, medium, and large industrial manufacturers in the City.

Table 5-2 Annual W/WW/SW Bill Impacts on a Typical Small Manufacturer

Small Manufacturer		2015	2016	2017	2018	
					Status Quo	w/ SWC
Annual Water Consumption (m^3)	7,200					
Land Area (hectares)	0.69					
Impervious Area (m^2)	5,310					
Annual W/WW/(SW) Bill		$ 21,850.32	$ 23,598.35	$ 24,778.54	$ 26,017.46	$ 21,824.39
Annual Stormwater Charge						$ 989.18
TOTAL Annual Bill		$ 21,850.32	$ 23,598.35	$ 24,778.54	$ 26,017.46	$ 22,813.57
Annual Increase			8.0%	5.0%	5.0%	-7.9%

Figure 5-4 Annual Bill Impacts for Small Manufacturer

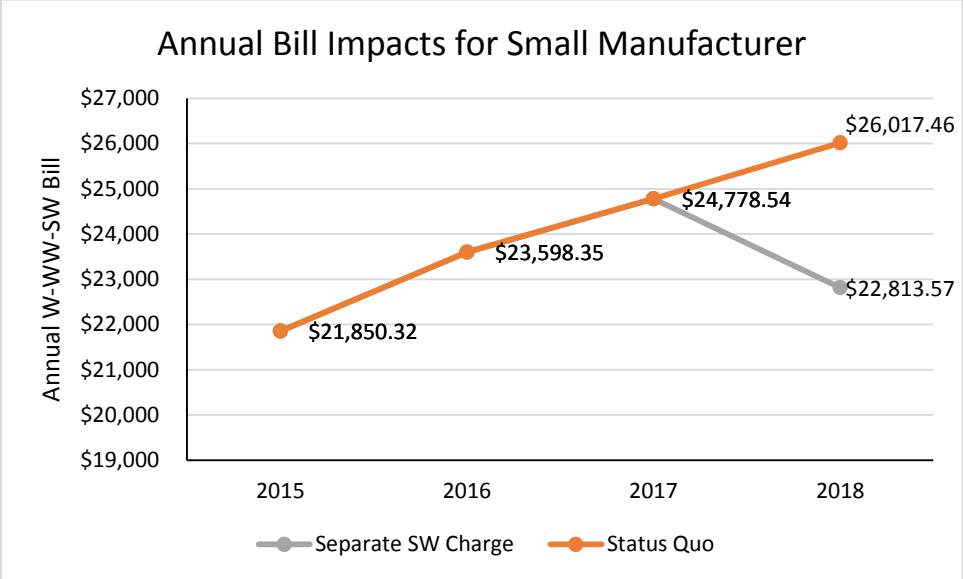


Table 5-3 Annual W/WW/SW Bill Impacts on a Typical Medium Manufacturer

Medium Manufacturer		2015	2016	2017	2018	
					Status Quo	w/ SWC
Annual Water Consumption (m³)	32,700					
Land Area (hectares)	1.70					
Impervious Area (m²)	13,069					
Annual W/WW/(SW) Bill		$ 78,870.87	$ 85,180.54	$ 89,441.00	$ 93,913.05	$ 78,778.38
Annual Stormwater Charge						$ 10,193.87
TOTAL Annual Bill		$ 78,870.87	$ 85,180.54	$ 89,441.00	$ 93,913.05	$ 88,972.26
Annual Increase			8.0%	5.0%	5.0%	-0.5%

Figure 5-5 Annual Bill Impacts for Medium Manufacturer

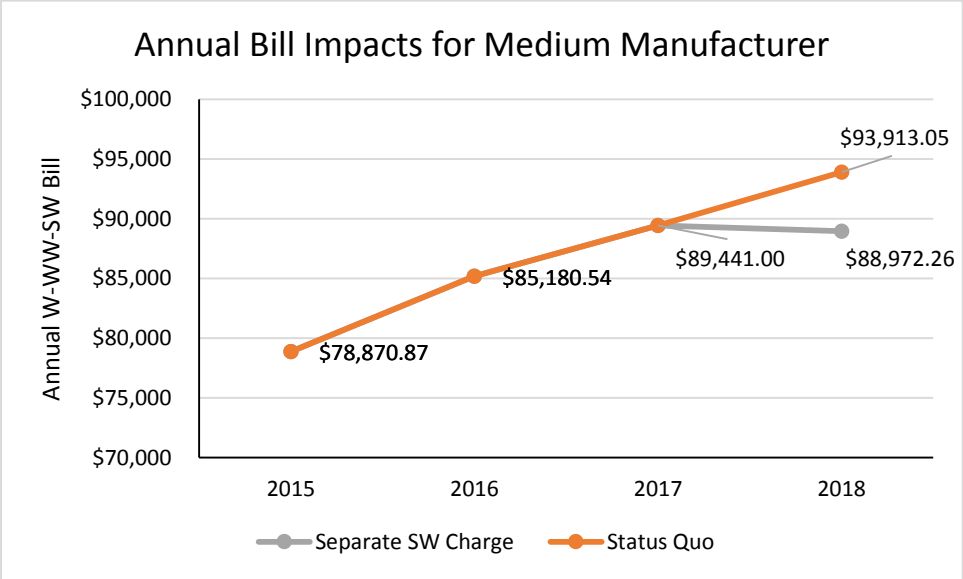
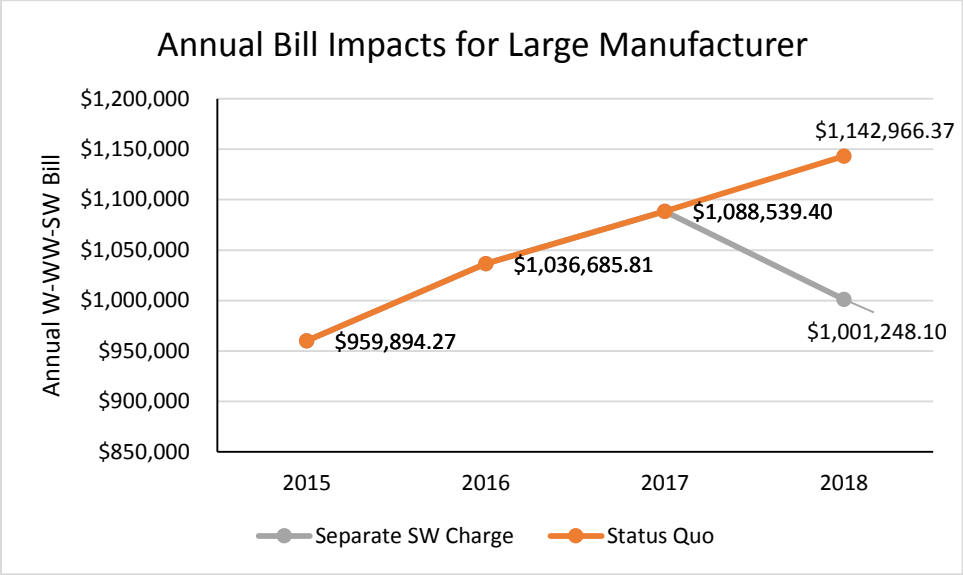


Table 5-4 Annual W/WW/SW Bill Impacts on a Typical Large Manufacturer

Large Manufacturer		2015	2016	2017	2018	
					Status Quo	w/ SWC
Annual Water Consumption (m³)	426,700					
Land Area (hectares)	7.07					
Impervious Area (m²)	54,455					
Annual W/WW/(SW) Bill		$ 959,894.27	$1,036,685.81	$1,088,539.40	$ 1,142,966.37	$ 958,773.44
Annual Stormwater Charge						$ 42,474.66
TOTAL Annual Bill		$ 959,894.27	$1,036,685.81	$1,088,539.40	$ 1,142,966.37	$ 1,001,248.10
Annual Increase			8.0%	5.0%	5.0%	-8.0%

Figure 5-6 Annual Bill Impacts for Large Manufacturer



As can be seen in Tables 5-1 through 5-3 and Figures 5-4 through 5-6, the introduction of a separate stormwater charge would result in a decrease of the total annual cost for water, wastewater and stormwater services for all three industrial manufacturing Case Studies. This results would suggest that under the current funding model for stormwater services (i.e. through the City's water rate), a disproportionately large part of the City's stormwater service costs are being recovered from the manufacturing sector.

Appendix A – Profiles of Comparator Municipalities

Appendix A – Profiles of Comparator Municipalities

Greater Toronto Area Cities

City	Census Population	Employment (Place of Work)[1]	Industrial GFA (sq. ft. of industrial building space)[2]	Manufacturing Employment (Place of Work)[3]
City of Toronto	2,615,100	1,384,400	252,099,000	124,600
City of Mississauga	713,400	393,000	155,559,000	65,400
City of Brampton	523,900	154,100	80,980,000	35,200
City of Vaughan	288,300	198,100	66,559,000	22,300
City of Markham	301,700	158,700	35,656,000	15,100
Town of Richmond Hill	185,500	66,200	12,757,000	6,500
Town of Pickering	88,700	32,500	9,457,000	2,300

1. Excludes most work at home employment, depending on survey methodology may include some employment from home-based businesses.
2. Estimates from industrial market reports.
3. Employment categorized as NAICS Codes 31-33.

Sources: Watson & Associates Economists Ltd. Population derived from Statistics Canada Census, 2011. Employment- derived from Durham Region Employment Survey, 2014; York Region Employment Survey, 2014; City of Toronto Employment Survey, 2014; City of Brampton Employment Survey, 2014; City of Mississauga Employment Survey, 2015; and City of Toronto July 2015 Economic Indicators. Industrial GFA Estimates- derived from CBRE Industrial MarketView Report, 2015.

Other Canadian Cities

City	Census Population	Employment (Place of Work)[1]	Industrial GFA (sq. ft. of industrial building space)[2]	Manufacturing Employment (Place of Work)[3]
City of Montreal	1,649,500	1,090,600	144,374,000	118,700
City of Edmonton	812,200	415,200	78,500,000	28,500
City of Ottawa	883,400	566,000	29,875,000	25,300
City of Vancouver	603,500	325,600	23,462,000	11,500

1. Excludes work at home employment.
2. Estimates from industrial market reports.
3. Employment categorized as NAICS Codes 31-33.

Sources: Watson & Associates Economists Ltd. Population and Employment- derived from Statistics Canada Census, 2011; and City of Ottawa Employment Survey, 2012. Industrial GFA Estimates- derived from CBRE Industrial MarketView Report, 2015 (Ottawa); Avison Young Industrial Report, 2014 (Vancouver); and Jones Lang LaSalle Industrial Insight Report, 2015 (Montreal).

U.S. Cities

City	Census Population	Employment (Place of Work)[1]	Industrial GFA (sq. ft. of industrial building space)[2]	Manufacturing Employment (Place of Work)[3]
City of Los Angeles, CA	3,792,600	1,866,200	211,293,000	101,100
City of Chicago, IL	2,695,600	1,396,800	173,348,000	58,400
City of Dallas, TX	1,197,800	793,100	127,634,000	42,800
Indianapolis, IN	820,400	519,900	98,892,000	25,000 to 49,999
City of Cleveland, OH	396,800	273,900	62,770,000	22,100
City of Atlanta, GA	420,000	469,700	36,550,000	12,300
City of Winston-Salem, NC	229,600	145,300	10,621,000	8,300

1. Excludes most work at home employment.
2. Estimates from industrial market reports.
3. Employment categorized as NAICS Codes 31-33.

Sources: Watson & Associates Economists Ltd. Population and Employment- derived from U.S. Census Bureau, 2010 American Community Survey 5-Year estimates; and U.S. Census Bureau, 2012 Economic Census. Industrial GFA Estimates- derived from Colliers International Industrial Market Report, 2015 (Los Angeles, Dallas, and Chicago); Colliers International Industrial Market Report, 2013 (Cleveland); Colliers International Industrial Market Report, 2014 (Indianapolis); CBRE Industrial MarketView Report, 2014 (Atlanta); and CoStar Group, The CoStar Industrial Report, 2014 (Winston-Salem).

Appendix B – Data Sources

Appendix B – Data Sources

Water, Wastewater and Stormwater Rates and Structures

Toronto

http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=a916ff0e43db1410VgnVCM10000071d60f89RCRD Date Accessed: September 22, 2015.

Brampton

https://www.peelregion.ca/pw/water/rates/waterbills/yourbill/rates.htm Date Accessed: September 22, 2015.

Mississauga

https://www.peelregion.ca/pw/water/rates/waterbills/yourbill/rates.htm Date Accessed: September 22, 2015.

http://www.mississauga.ca/portal/stormwater/non-residential-charge Date Accessed: September 22, 2015.

Vaughan

https://www.vaughan.ca/services/residential/water_and_wastewater_financial_report/General%20Documents/2015%20Water%20and%20Wastewater%20Rates%20and%20Service%20Fees.pdf Date Accessed: September 22, 2015.

Richmond Hill

http://www.richmondhill.ca/subpage.asp?pageid=finance_water Date Accessed: September 22, 2015.

Markham

https://www.markham.ca/wps/portal/Markham/Residents/Water/RatesBills/WaterRates Date Accessed: September 22, 2015.

https://www.markham.ca/wps/portal/Markham/MunicipalGovernment/AboutMunicipalGovernment/MajorCityProjects/StormwaterMgmt/stormwater Date Accessed: September 22, 2015.

Pickering

http://www.durham.ca/extcontent.asp?nr=departments/finance/water/howabill.htm&setFooter=includes/financewaterfooter.inc#rates Date Accessed: September 22, 2015.

Montreal

http://ville.montreal.qc.ca/portal/page?_pageid=44,289249&_dad=portal&_schema=PORTAL Date Accessed: September 22, 2015.

http://ville.montreal.qc.ca/portal/page?_pageid=44,289373&_dad=portal&_schema=PORTAL Date Accessed: September 22, 2015.

http://ville.montreal.qc.ca/portal/page?_pageid=44,289461&_dad=portal&_schema=PORTAL Date Accessed: September 22, 2015.

Ottawa

http://ottawa.ca/en/residents/water-and-environment/water-and-sewer-bills/changes-your-water-and-sewer-bill Date Accessed: September 22, 2015.

Edmonton

http://www.epcor.com/water/commercial-customers/Pages/commercial-rates.aspx Date Accessed: September 22, 2015.

http://www.edmonton.ca/bylaws_licences/DrainageRatesBrochure.pdf Date Accessed: September 22, 2015.

Vancouver

http://vancouver.ca/home-property-development/metered-rates.aspx Date Accessed: September 22, 2015.

Los Angeles, CA

https://www.ladwp.com/ladwp/faces/wcnav_externalId/a-fr-schedul-c-comm-ind-gov?_adf.ctrl-state=w4698t4ku_4&_afrLoop=862658084228507 Date Accessed: September 22, 2015.

http://lacitysan.org/fmd/ssc1.htm Date Accessed: September 22, 2015.

Chicago, IL

http://www.cityofchicago.org/city/en/depts/water/provdrs/cust_serv/svcs/know_my_water_sewerrates.html Date Accessed: September 22, 2015.

Atlanta, GA

http://www.atlantawatershed.org/customer-service/rates/ Date Accessed: September 22, 2015.

Winston-Salem, NC

http://www.cityofws.org/departments/utilities Date Accessed: September 22, 2015.

Indianapolis, IN

http://www.citizensenergygroup.com/custom/specialpages/ratesridersdownload.aspx?dbfileid=31 Date Accessed: September 22, 2015.

Dallas, TX

http://dallascityhall.com/departments/waterutilities/Water%20Bill%20Insert/2015%20Inserts/Oct2015%20Rate%20bi_web%20%283%29.pdf Date Accessed: September 22, 2015.

Cleveland, OH

http://www.clevelandwater.com/customer-service/water-rates/rates-fees Date Accessed: September 22, 2015.

Wastewater Policy

Toronto

Sewer Surcharge Rebate Program

http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=2e3807ceb6f8e310VgnVCM10000071d60f89RCRD&vgnextchannel=ff3cd4818444f310VgnVCM10000071d60f89RCRD Date Accessed: October 6, 2015.

Sewer By-law & Industrial Waste Control

http://www.toronto.ca/legdocs/municode/1184_681.pdf Date Accessed: October 6, 2015.

Capacity Buy Back Program

http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=390907ceb6f8e310VgnVCM10000071d60f89RCRD&vgnextchannel=1c4bfd788a5af310VgnVCM10000071d60f89RCRD Date Accessed: October 6, 2015.

Brampton and Mississauga (Peel Region)

Sewer By-law

https://www.peelregion.ca/council/bylaws/2010s/2010/bl-53-2010.pdf Date Accessed: October 6, 2015.

Vaughan

Sewer Use By-law

https://www.vaughan.ca/cityhall/by_laws/Pages/default.aspx Date Accessed: October 6, 2015.

Richmond Hill

Proposed Sewer By-law 2013

http://www.richmondhill.ca/documents/meetings/cow/12_2_2013_16_30/Item%2006.pdf Date Accessed: October 6, 2015.

Markham

Backflow Prevention Program

https://www.markham.ca/wps/wcm/connect/markhampublic/182503e1-7cac-4f2c-ac2b-6c806823f1d9/Backflow+Prevention.pdf?MOD=AJPERES&CACHEID=182503e1-7cac-4f2c-ac2b-6c806823f1d9 Date Accessed: October 6, 2015.

Sewer Use By-law

https://www.markham.ca/wps/wcm/connect/markhampublic/f95bde42-b38a-436f-94f2-a61e0099517f/Sewer+Use+Bylaw+436-86.pdf?MOD=AJPERES&CACHEID=f95bde42-b38a-436f-94f2-a61e0099517f Date Accessed: October 6, 2015.

Pickering (Durham Region)

Sewer Use By-law

http://www.durham.ca/departments/clerk/bylaws/bylaw55_2013.pdf Date Accessed: October 6, 2015.

Montreal

Industrial Water Control

http://ville.montreal.qc.ca/portal/page?_pageid=6497,54369570&_dad=portal&_schema=PORTAL Date Accessed: October 6, 2015.

Ottawa

Sewer Use Program

http://ottawa.ca/en/residents/water-and-environment/sewers-and-sewage-treatment/compliance-measures#P7_424 Date Accessed: October 6, 2015.

Sewer Use By-law

http://ottawa.ca/en/residents/laws-licenses-and-permits/laws/sewer-use-law-no-2003-514 Date Accessed: October 6, 2015.

Edmonton

Drainage By-law and Non-residential Sewer Utility Credit

http://www.edmonton.ca/residential_neighbourhoods/C16200.pdf Date Accessed: October 6, 2015.

Vancouver

Sewer and Water Course By-law

http://vancouver.ca/doing-business/wastewater-discharge-permit-for-industry-or-manufacturing.aspx Date Accessed: October 6, 2015.

http://former.vancouver.ca/bylaws/8093c.PDF Date Accessed: October 6, 2015.

Los Angeles and Chicago

Information unavailable

Atlanta

Wastewater Discharge

https://www.atlantawatershed.org/customer-service/forms/ Date Accessed: October 6, 2015.

http://www.atlantawatershed.org/inside-dwm/offices/watershed-protection/back-flow-compliance/ Date Accessed: October 6, 2015.

Cleveland

Sewage Service Charges Based on Usage of the System (SSCBOUTS), Surcharge, Temporary Discharge Permits, and Non-Discharge/Non-User Status

http://www.neorsd.org/industrial_customers.php Date Accessed: October 6, 2015.

Winston-Salem

Discharge Permits and Fees

http://www.cityofws.org/departments/utilities/operations/industrial-wastewater-operations/discharge-permits-and-fees Date Accessed: October 6, 2015.

http://www.cityofws.org/departments/utilities/operations/industrial-wastewater-operations Date Accessed: October 6, 2015.

Surcharge Program

http://www.cityofws.org/departments/utilities/operations/industrial-wastewater-operations/surcharge-program Date Accessed: October 6, 2015.

Indianapolis

Industrial Pretreatment Program and Discharge Permits

http://www.citizensenergygroup.com/My-Business/Utility-Services/Wastewater/Industrial-Pretreatment-Program Date Accessed: October 6, 2015.

http://www.citizensenergygroup.com/custom/specialpages/ratesridersdownload.aspx?dbfileid=87 Date Accessed: October 6, 2015.

Dallas

Permit to Discharge Industrial Wastes

http://dallascityhall.com/departments/waterutilities/pretreatmentprogram/Pages/discharge_industrial.aspx Date Accessed: October 6, 2015.

Surcharge Program

http://dallascityhall.com/departments/waterutilities/pretreatmentprogram/Pages/surcharge_program.aspx Date Accessed: October 6, 2015.

Property Tax Rates

Toronto

http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=6245ff0e43db1410VgnVCM10000071d60f89RCRD Date Accessed: September 24, 2015.

Brampton

http://www.brampton.ca/EN/residents/Taxes-Assessment/taxation/Pages/Tax-Rates.aspx Date Accessed: September 24, 2015.

Mississauga

http://www.mississauga.ca/portal/business/taxrates Date Accessed: September 24, 2015.

Vaughan

https://www.vaughan.ca/services/property_tax_and_assessment/General%20Documents/2015%20Property%20Tax%20Rate%20Schedule.pdf Date Accessed: September 24, 2015.

Richmond Hill

http://www.richmondhill.ca/documents/finance_2015_tax_rates.pdf Date Accessed: September 24, 2015.

Markham

https://www.markham.ca/wps/portal/Markham/MunicipalGovernment/PropertyTaxes/TaxRates/ Date Accessed: September 24, 2015.

Pickering

https://www.pickering.ca/en/cityhall/resources/2015TaxRates.pdf Date Accessed: September 24, 2015.

Montreal

http://ville.montreal.qc.ca/portal/page?_pageid=44,14111603&_dad=portal&_schema=PORTAL Date Accessed: September 24, 2015.

Edmonton

http://www.edmonton.ca/residential_neighbourhoods/property_tax_assessment/tax-rates.aspx Date Accessed: September 24, 2015.

Vancouver

Tax Rates: http://vancouver.ca/home-property-development/tax-rates.aspx Date Accessed: September 24, 2015.

Actual Tax Bills: https://revservices.vancouver.ca/tempestprd/webinquiry/frames.cfm Date Accessed: September 24, 2015.

Los Angeles, CA

Tax Rates: http://onlineapps.auditor.lacounty.gov/TRA/ Date Accessed: September 24, 2015.

Chicago, IL

Tax Rates: http://www.cookcountyclerk.com/tsd/DocumentLibrary/2014%20Tax%20Rate%20Report.pdf Date Accessed: September 24, 2015.

Tax Districts: http://cookviewer1.cookcountyil.gov/jsviewer/mapviewer.html Date Accessed: September 24, 2015.

Atlanta, GA

https://www.fultoncountytaxes.org/property-taxes/search-for-tax-bill.aspx Date Accessed: September 24, 2015.

Winston-Salem, NC

http://maps.co.forsyth.nc.us/forsythjs/ Date Accessed: September 24, 2015.

Indianapolis, IN

Tax Rate Areas: http://maps.indy.gov/AssessorPropertyCards/ Date Accessed: September 24, 2015.

Tax Rates: http://www.stats.indiana.edu/dms4/propertytaxes.asp Date Accessed: September 24, 2015.

Dallas, TX

http://www.dallascounty.org/department/tax/2014_taxrates.php Date Accessed: September 24, 2015.

Dallas Central Appraisal District (DCAD) 2015 Real Property Certified Appraisal Rolls <http://www.dallascad.org/DataProducts.aspx>

Cleveland, OH

http://myplace.cuyahogacounty.us/ Date Accessed: September 24, 2015.

Appendix C – Industry Survey

Watson & Associates ECONOMISTS LTD.

Plaza Three
101-2000 Argentia Rd.
Mississauga, Ontario
Canada L5N 1V9
Phone: (905) 272-3600
Fax: (905) 272-3602
e-mail: info@watson-econ.ca

September 10, 2015

Dear Sir/Madame:

Re: Competitiveness-user Rates Municipal Study – Costs and Levies Charged to Manufacturing Operations

The City of Toronto (City) has retained Watson & Associates Economists Ltd. to undertake an analysis of the various operating costs and user fees faced by the City's manufacturing sector, and an assessment of the City's competitiveness in this regard against a select group of North American municipalities. As part of this study we are looking to identify all user rates and taxes imposed for municipal services, other orders of government, and also non-government service providers (i.e. hydro and gas).

In order to be able to provide a comparison with other municipalities, we will establish three Case Studies (small, medium, and large manufacturing operations) with a set of parameters (land area, building footprint, water/gas/electricity consumption, etc.) defining each Case Study. Taxes and user rates imposed within the various comparator municipalities will then be applied to each Case Study to determine overall cost-competitiveness of each municipality. Effectively, each case study will represent a hypothetical manufacturer for comparison purposes.

We are seeking your input on any fees and charges you are typically faced with, and also on the consumption parameters defining your operation. For this purpose, we have developed a set of questions. Please provide your answer in the space provided or feel free to contact us to make alternative arrangements. Your response, along with any supporting documentation, can be emailed to simcisko@watson-econ.ca. Please provide follow-up contact information with your response in case we need to clarify some of the information provided.

We much appreciate your help and look forward to receiving any input you may be able to provide. We are on a very short timeline, your timely response in this regard would be greatly appreciated.

Any information that you disclose to us will be kept strictly confidential and will be used exclusively to build our model. Any data that will be released to the City will be kept anonymous.

1. Municipal Taxes & Fees

We are obtaining water consumption records and property tax assessment data from the City to inform typical water/wastewater and property tax bills. Are there any other municipal fees (e.g. licensing fees) applicable to your operation?

2. Fees & Charges imposed by Other Agencies

As part of this study, we are also considering fees and charges imposed by other agencies (e.g. hydro and gas). Please provide your typical annual electricity and natural gas consumption, annual cost for each service, and any rate information pertaining to these services.

3. Fees & Charges imposed by Other Levels of Government

The Study also considers fees and charges imposed by higher levels of government (i.e. Provincial or Federal governments and their respective agencies). Are you aware of any such fees or charges applicable to your operation? If so, could you provide the annual cost of these fees and/or charges?

4. Provincial & Federal Taxation

In order to be able to assess appropriate levels of corporate income tax, are you able to share with us your annual pre-tax income, Provincial and Federal income taxes and a copy of your recent financial statements?

5. Financial Incentives & Discounts

We are also assessing any financial support mechanisms that assist manufacturers to off-set costs levied on them that are linked to public policy goals such as energy conservation, attracting investment, and creating employment. Are you aware of any such incentives, discounts, or subsidies that are applicable to your operation? If so, could you please describe and quantify the support program?

6. Facility Space

Total facility space is being used to partition manufacturers into three size classes (small, medium, and large). Please provide total floor area of facility space and the respective unit of measure.

7. Additional Information

In respect of the questions identified above, are you able to provide information from any subsidiary offices you may have in other North American Jurisdictions?

We thank you for your participation in this study, and we will welcome any additional comments you may have.

Yours very truly,

WATSON & ASSOCIATES ECONOMISTS LTD.

Andrew Grunda, MBA, CPA, CMA
Principal

Appendix D – Minutes of Industry Consultation Session

Industrial Manufacturing Program Advisory Committee in Toronto (IMPACT) with Members of the Toronto Industry Network (TIN)

Wednesday September 30, 2015 Meeting Notes

Theme – City of Toronto Competitiveness-User Rates Municipal Study:

Industry Consultation Session

Contact	Company
Manufacturers (Attended)	
Colleen Musalem	Cana-Datum Moulds Ltd
Brad Bourne	FTG- Firan Technology Group Corporation
Steve Sandre	Knoll North America Corp
Jaime Castro	Knoll North America Corp
Milton Parissis	Parissis Partners
Larry Dime	Toronto Research Chemicals
David Gelbloom	Upper Crust, CMS Ontario Limited
Paul Scrivener	Toronto Industry Network
Anima Doyle	Redpath Sugar Ltd.
Chris Smith	The International Group, Inc.
Melanee Short	Sanofi Pasteur
Craig Mcluckie	Irving Tissue
City of Toronto Staff (Attended)	
John Alderdice	Economic Development and Culture, Business Growth Services
Neil Farmer	Economic Development and Culture, Business Growth Services
Rob Krauss	Economic Development and Culture, Business Growth Services
Larissa Deneau	Economic Development and Culture, Policy Development
Sal Vivona	Economic Development and Culture, Policy Development
Kurtis Elton	Toronto Water, Policy and Program Development
Victoria Wood	Toronto Water
Consultant Team (Attended)	
Andrew Grunda	Watson & Associates Economists Ltd.
Erik Karviner	Watson & Associates Economists Ltd.
Peter Simcisko	Watson & Associates Economists Ltd.
Manufacturers Regrets (IMPACT Members)	
Elie Betito	Apotex Inc

Irving Granovsky	Atlantic Packaging Products Ltd
Jocelyn Williams	Automatic Coating Limited
Kevin Hubert	Cimco Refrigeration
Peter Pekos	Dalton Pharma Services
Michael Dissanayake	East Metal
Mike Estepa	Gay Lea Foods
Adel Mir	Lincoln Electric Company of Canada
Lynda Ryder	National Silicates Limited
Raymond Fitch	Sanofi Pasteur
Rosanne Kalenuik	Starfield LION
Carmela Serebryany-Harris	Upper Crust, CMS Ontario Limited

1. Welcome and Introductions (9:40am)

John Alderdice, Manager of the City of Toronto Business Retention and Expansion Unit, welcomed all attendees and provided some context on the City of Toronto Competitiveness-User Rates Municipal Study.

- The study is the product of a City Council direction (see decision #178) to consult with the manufacturing industry and other key stakeholders on all costs levied locally on manufacturers by the City of Toronto and its agencies and corporations and report back to the Budget Committee. The report will also include an assessment of the impacts of various alternatives for charging for all aspects of water use (volume, waste water, storm water, parameters, etc).
- John introduced the consultants from Watson & Associates Economists Ltd that were awarded the contract and have been acquired by the City to perform the study.

2. Study Overview and Background

Andrew Grunda, from the consultant team Watson & Associates Economists Ltd., delivered a **PowerPoint presentation, as attached**.

- The consultants are collecting data and analyzing the operating costs that manufacturers face in four key sections: municipal utilities, property taxes, natural gas/hydroelectricity and corporate income taxes.

Methodology:

- Using data from the City of Toronto Employment Surveys, physical sites used for manufacturing were profiled into groups, representing small (less than 25,000 SF), medium (25,001-200,000 SF) or large manufacturers (more than 200,001 SF).
- A questionnaire was distributed to 48 manufacturers - 85% of which were either IMPACT or TIN members.
- The data from the questionnaire, in conjunction with City-provided data, is intended to inform the comparison of costs that manufacturers face in these four sections.

- The average costs in Toronto were compared relative to data from competitor cities in North America.
- Costs will be compared as a total dollar figure and as a percentage share of overall costs.

3. Preliminary Findings

- Andrew presented the preliminary findings of the study.
- See the preliminary findings in the **attached PowerPoint presentation.**

4. Industry Input

- There was significant feedback from participants on the methodology used and input was given on how the study findings could best reflect the cost burden on Toronto's manufacturers.
- For instance, some questions and comments were related to, but not limited to:
    - study methodology and the way that manufacturers were classified based upon the square feet of respective physical sites;
    - how costs were quantified and compared primarily in total dollar terms and less so as a rate comparison;
    - the desire to broaden the study scope to include other cost factors (i.e. labour, employment lands);
    - concerns firms had over releasing potentially sensitive information (i.e. negotiated gas rates),
    - and the importance of framing the findings so they accurately represent the costs that manufacturers face in North American and global contexts.
- Additional manufacturers are strongly encouraged to submit the completed questionnaire.
- Some remaining data from other jurisdictions is still to be collected.
- Consultants offered to meet in-person with manufacturers if they had concerns.

For further questions or input, please contact:

Peter Simcisko
Watson and Associated Economists Ltd.
101-2000 Argentia Road
Mississauga ON L5W 1V9
905-272-3600 x242
simcisko@watson-econ.ca

John Alderdice
Manager, Business Retention & Expansion
Economic Development & Culture,
Business Growth Services
City of Toronto
North York Civic Centre
5100 Yonge Street
Toronto, ON M2N 5V7

416-392-1004
jalderd@toronto.ca
www.toronto.ca/business

5. Project Schedule

Draft Report – October 9th

Final Report – October 23rd

Budget Committee Meeting – November 13th

6. Formal Meeting Adjourned (11:30am)

Next Meeting

TBD

Appendix E – Minutes of Environmental Stakeholder Groups Consultation Session

City of Toronto Competitiveness-User Rates Municipal Study: Environmental Non-Governmental Organizations Consultation

Thursday, October 8, 2015, 2:00-3:00pm
Meeting Notes

Attendee	Organization
Heather Marshall	Toronto Environmental Alliance
Michelle Sawka	Ontario Green Infrastructure Coalition
Andrew Grunda	Watson & Associates Economists Ltd.
Peter Simcisko	Watson & Associates Economists Ltd.
John Alderdice	City of Toronto, Economic Development & Culture
Sal Vivona	City of Toronto, Economic Development & Culture
Boriana Varleva	City of Toronto, Corporate Finance
Kurtis Elton	City of Toronto, Toronto Water
Victoria Wood	City of Toronto, Toronto Water

1. Welcome and Introductions

- Kurtis Elton, Policy & Program Advisor at Toronto Water, welcomed all attendees and provided some context on the City of Toronto Competitiveness-User Rates Municipal Study.
- All attendees introduced themselves.
- The study is the product of a City Council direction (see decision #178) to consult with the manufacturing industry, environmental experts and other key stakeholders on all costs levied locally on manufacturers by the City of Toronto and its agencies and corporations and report back to the Budget Committee. The report will also include an assessment of the impacts of various alternatives for charging for all aspects of water use (volume, waste water, storm water, parameters, etc.).
- Kurtis introduced the consultants from Watson & Associates Economists Ltd that were awarded the contract and have been acquired by the City to perform the study.

2. Study Overview and Preliminary Findings

- Andrew Grunda, from the consultant team Watson & Associates Economists Ltd., delivered a PowerPoint presentation outlining the study, their methods and preliminary findings.

3. Discussion

- Toronto Environmental Alliance (TEA) wants the City to be competitive for industrial manufacturing, but still wants good water pricing practices that encourage users to look inward at their systems and processes in order to improve efficiencies.
- TEA noted that manufacturers that treat their wastewater onsite to meet standards outlined in the City's Sewers By-law are effectively subsidizing companies that do not meet the standards and pay according to industrial waste surcharge agreements.

4. Adjourn

- Attendees were given appropriate contact information in case they had any other thoughts or questions.