

## SECTION II

# 22 Water Services



### What is the Service?

Water Services include the treatment and distribution of potable (drinking) water from the water supply source to the customer. The goal of water services is to ensure a clean, affordable and adequate supply of water is available to meet demand from both existing communities and from future development. Provincial and municipal policies ensure water supply is readily available for emergency purposes, such as fire protection and to meet peak demand conditions.

To ensure the drinking water from your tap is safe and of high quality, it undergoes monitoring and testing during the treatment process. The distribution system is also monitored frequently. Annual water quality reports are available from your municipal water provider, showing compliance with provincial and federal water quality regulations.

*Specific objectives include:*

- Treatment of source water at water treatment plants to ensure drinking water meets or exceeds regulatory requirements
- Distribution of drinking water to customers through systems of water mains, water pumping stations and storage reservoirs
- Ensuring adequate capacity is maintained for both existing communities and future development

Water services are provided to residential and Industrial, Commercial and Institutional (ICI) sector customers. These services are generally funded through Municipal water rates.

### Influencing Factors:

**Age of Infrastructure:** The age and condition of water distribution system, the type of water distribution pipe material and the frequency of maintenance activities.

**Conservation Programs:** The extent of municipal water conservation programs can impact water consumption.

**Provincial Standards:** Specific municipal water quality requirements may exceed provincial regulations.

**Supply and Demand:** Cost is impacted by the water source (ground water or surface water), the resulting treatment costs and the number of independent water supply/distribution systems operated, and size of the geographic area serviced. Variation in supply to the ICI and residential sectors, relative to total system demand.

**Treatment Plants:** The number, size and complexity of a municipality's water treatment plants.

**Urban Density:** The proximity of pipes to other utilities increases the cost for infrastructure repair and replacement.

**Weather Conditions:** Negative impacts associated with more severe and frequent extreme weather events.

### Additional Information:

**Integrated Systems:** *The term applies to those Cities and Municipalities that have full responsibility for all water activities including treatment, transmission, storage and local distribution.*

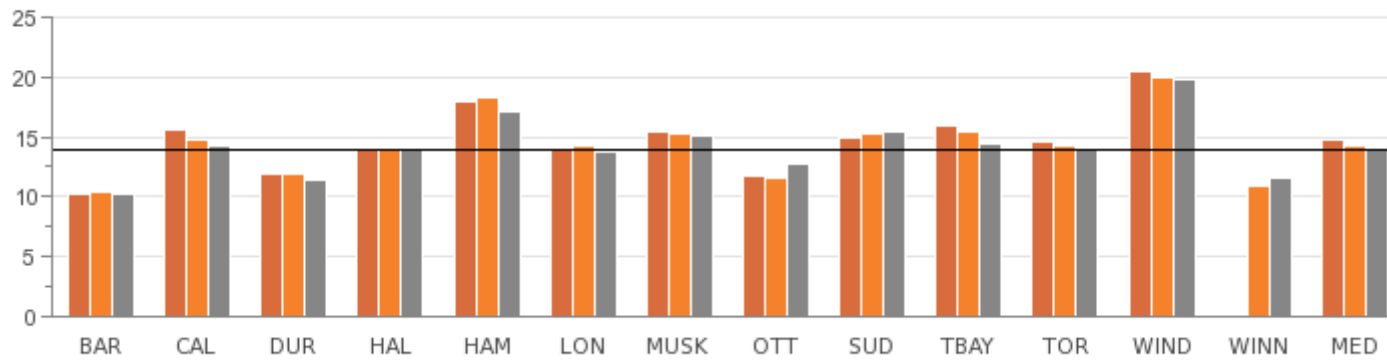
**Two-Tier Systems:** *The term applies to those Municipalities that have responsibility for components of water activities, e.g. Niagara, Waterloo and York Regions are responsible for water treatment, water transmission and major water storage facilities; and whereas local municipalities are responsible for local water distribution systems and storage facilities.*

# Water Services

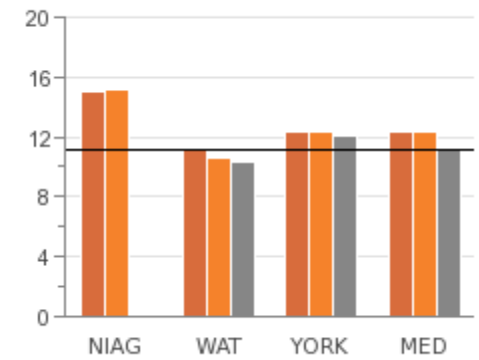
## How much water is treated in each municipality?

Fig 22.1 Megalitres of Treated Water per 100,000 Population

Integrated Systems (In Thousands)



Two-Tier Systems (In Thousands)



2009	10,293	15,579	11,909	14,060	17,940	14,049	15,455	11,757	14,901	15,910	14,642	20,468	N/A	14,772		15,048	11,069	12,337	12,337
2010	10,414	14,684	11,821	13,913	18,319	14,219	15,334	11,566	15,225	15,390	14,194	19,963	10,968	14,219		15,177	10,645	12,369	12,369
2011	10,246	14,321	11,376	13,858	17,128	13,704	15,064	12,710	15,361	14,367	13,906	19,775	11,560	13,906		N/A	10,342	12,022	11,182

Source: WATR210 (Service Level)

Note: Refer to Additional Information.

Note: Includes residential and ICI sectors.

## What is the average age of the infrastructure and the population density of the serviced community?

Fig 22.2 Average Age of Infrastructure and Population Density of Serviced Community

Municipality	Average Age of Water Pipe	Population Density
Barrie	20	1,400
Calgary	29	1,286
Durham	20	1,499
Halton	23	491
Hamilton	43	435
London	34	841
Muskoka	40	7
Niagara	N/A	N/A

**2011 RESULTS**

Municipality	Average Age of Water Pipe	Population Density
Ottawa	32	299
Sudbury (Greater)	46	215
Thunder Bay	47	312
Toronto	57	4,401
Waterloo	N/A	379
Windsor	45	1,436
Winnipeg	40	1,446
York	16	575

Source: WATR120 (Community Impact) WATR009 (Population Density)

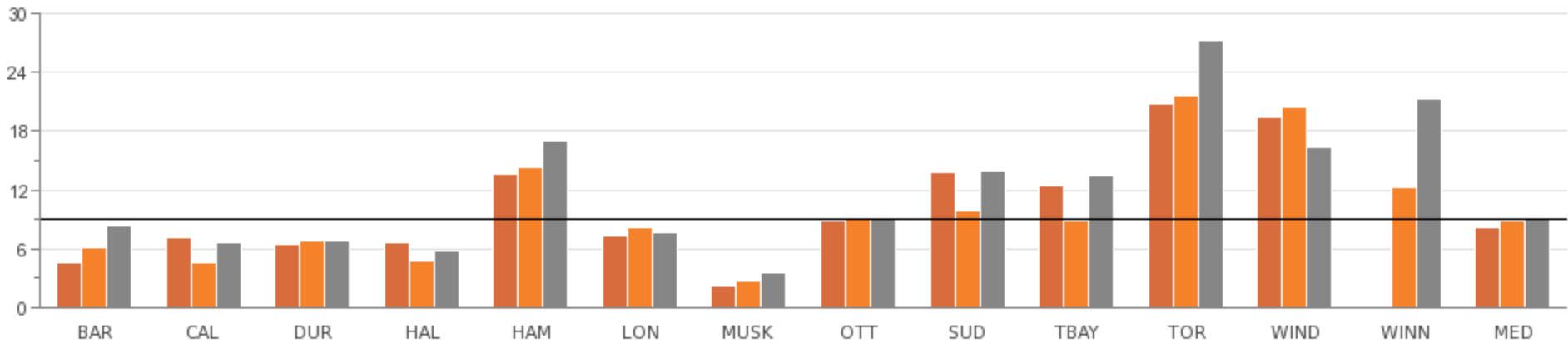
### Additional Information

**Age of Water Distribution Pipe:** Older pipes are usually in poor condition as a result of pipe corrosion, pipe materials (susceptible to fractures), leakage at pipe joints and service connections which contributes to an increased frequency of water main breaks relative to newer systems that do not have such deficiencies.

**Density of Development Water Services:** The density of development within a service area has a direct impact on the cost of maintenance and repair of the water systems. The downtown areas of older communities typically have higher density development on narrow road allowances. The cost of maintaining and repairing pipes in a dense urban environment is higher, resulting in higher costs for maintenance and repair activities relative to a suburban environment. Communities with lower development densities typically have wider unrestricted road allowances which make repairs easier and less costly to carry-out.

## How many watermain breaks occurred?

Fig 22.3 Number of Water Main Breaks per 100 Km of Water Distribution Pipe (excluding Service Connections and Hydrant Leads)



2009	4.5	7.1	6.5	6.6	13.7	7.3	2.1	8.9	13.8	12.4	20.8	19.4	N/A	8.1
2010	6.1	4.6	6.8	4.8	14.3	8.2	2.6	9.0	9.8	8.8	21.6	20.5	12.2	8.8
2011	8.4	6.6	6.8	5.8	17.1	7.6	3.5	9.0	13.9	13.4	27.3	16.4	21.3	9.0

Source: WATR410M (Customer Service)

Note: Refer to Additional Information.

Note: This measure excludes service connections and hydrant leads.

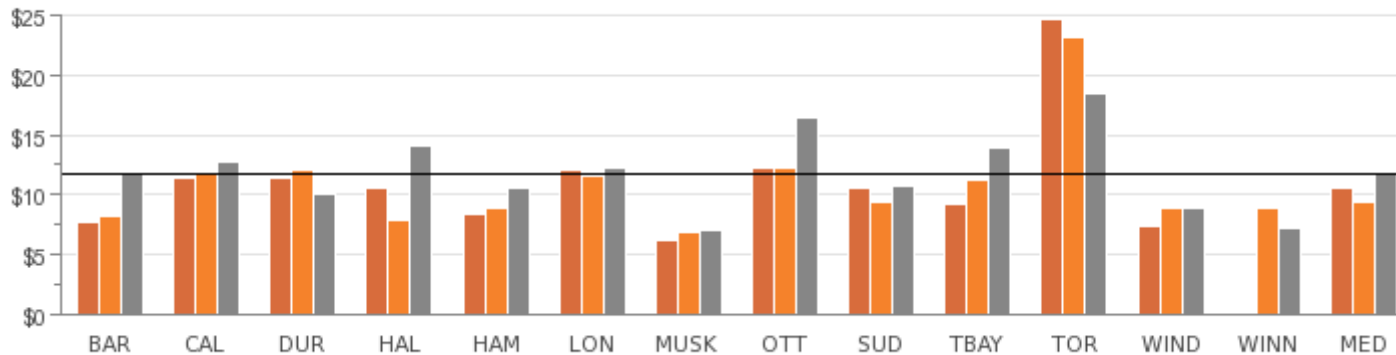
Note: Niagara, Waterloo and York are not responsible for local water distribution.

Comment: The supporting information on the age of watermain pipe shows there is a relationship between older water distribution systems and higher rates of water main breaks.

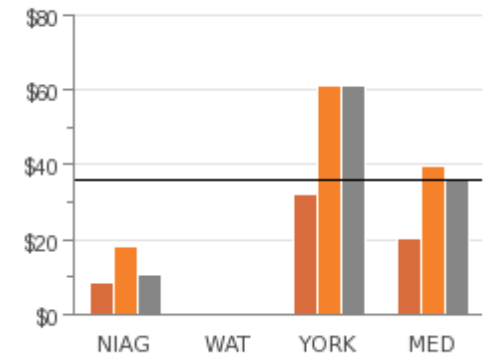
## What is the operating cost for the distribution and transmission of drinking water?

Fig 22.4 Operating Cost for the Distribution/Transmission of Drinking Water per Km of Water Distribution Pipe

Integrated Systems (In Thousands)



Two-Tier Systems (In Thousands)



2009	\$7,669	\$11,412	\$11,441	\$10,535	\$8,426	\$12,003	\$6,138	\$12,230	\$10,642	\$9,196	\$24,722	\$7,306	N/A	\$10,589		\$8,818	N/A	\$32,379	\$20,599
2010	\$8,286	\$11,890	\$12,117	\$7,943	\$8,913	\$11,583	\$6,805	\$12,287	\$9,305	\$11,217	\$23,160	\$8,815	\$8,929	\$9,305		\$18,001	N/A	\$60,933	\$39,467
2011	\$11,816	\$12,802	\$9,987	\$13,998	\$10,520	\$12,255	\$7,006	\$16,486	\$10,712	\$13,923	\$18,410	\$8,917	\$7,217	\$11,816		\$10,677	N/A	\$60,993	\$35,835

Source: WATR305M (Efficiency)

Note: Refer to Additional Information.

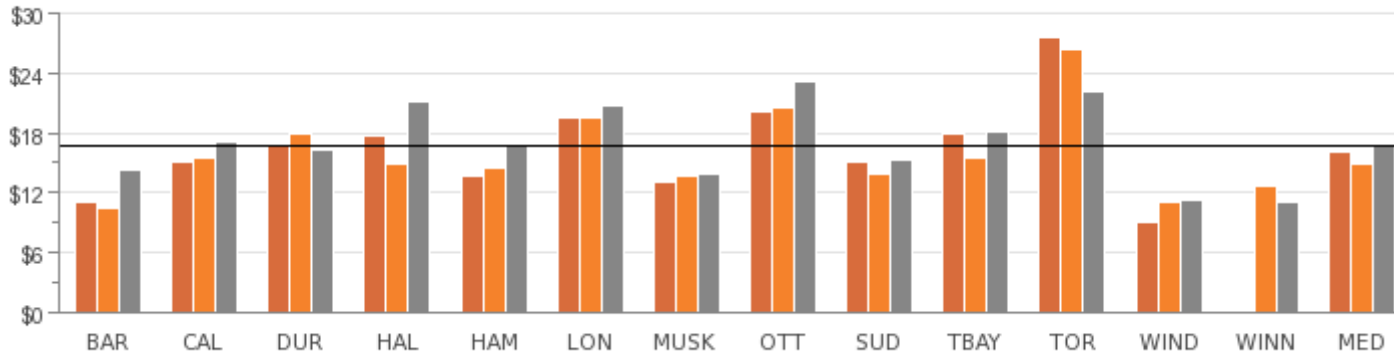
Note: Waterloo is not responsible for distribution or transmission.

Comment: Municipalities providing service over a broad geographic area generally have higher operating costs due to the number and type of water treatment facilities operated and the distance between the individual systems. This has an impact on the daily operating costs for both the treatment and distribution of drinking water.

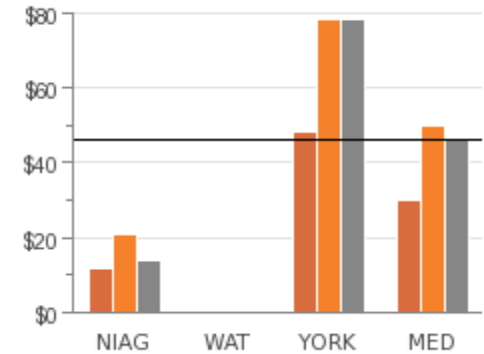
## What is the total cost for the distribution and transmission of drinking water?

Fig 22.5 OMBI Total Cost for the Distribution/Transmission of Drinking Water per Km of Water Distribution Pipe (includes amortization)

Integrated Systems (In Thousands)



Two-Tier Systems (In Thousands)



2009	\$11,137	\$15,160	\$16,846	\$17,662	\$13,719	\$19,583	\$12,981	\$20,032	\$15,058	\$17,920	\$27,512	\$8,977	N/A	\$16,003		\$11,775	N/A	\$48,092	\$29,934
2010	\$10,519	\$15,392	\$17,959	\$14,847	\$14,559	\$19,543	\$13,626	\$20,603	\$13,839	\$15,399	\$26,283	\$11,084	\$12,579	\$14,847		\$20,982	N/A	\$78,483	\$49,733
2011	\$14,252	\$17,105	\$16,256	\$21,131	\$16,637	\$20,703	\$13,874	\$23,159	\$15,322	\$18,067	\$22,188	\$11,319	\$11,036	\$16,637		\$13,838	N/A	\$78,227	\$46,033

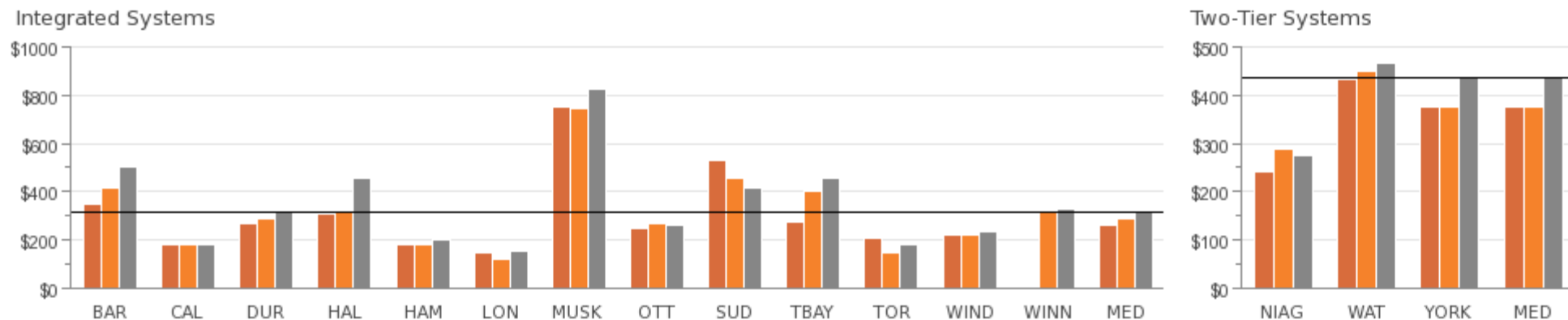
Source: WATR305T (Efficiency)

Note: Calculation includes amortization.

Comment: Municipalities providing service over a broad geographic area generally have higher operating costs due to the number and type of water treatment facilities operated and the distance between the individual systems. This has an impact on the daily operating costs for both the treatment and distribution of drinking water.

## What is the operating cost for the treatment of drinking water?

Fig 22.6 Operating Cost for the Treatment of Drinking Water per Megalitre of Drinking Water Treated



2009	\$350	\$179	\$270	\$307	\$182	\$148	\$754	\$247	\$527	\$277	\$209	\$222	N/A	\$259		\$240	\$433	\$374	\$374
2010	\$417	\$180	\$286	\$325	\$183	\$124	\$745	\$266	\$454	\$403	\$150	\$222	\$313	\$286		\$287	\$450	\$376	\$376
2011	\$502	\$180	\$317	\$453	\$198	\$156	\$827	\$262	\$414	\$453	\$179	\$235	\$329	\$317		\$275	\$466	\$437	\$437

Source: WATR310M (Efficiency)

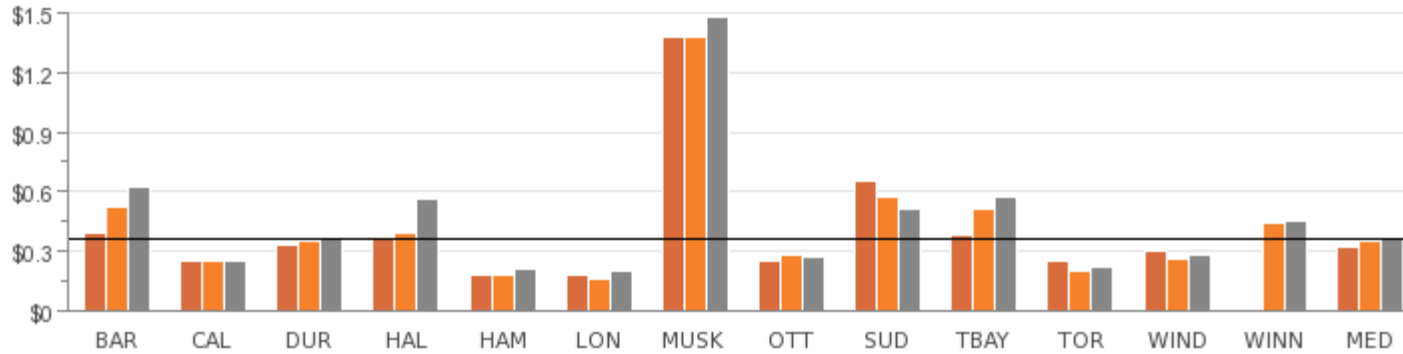
Note: Refer to Additional Information.

Comment: Costs include operation and maintenance of treatment plants as well as quality assurance and laboratory testing to ensure compliance with regulations.

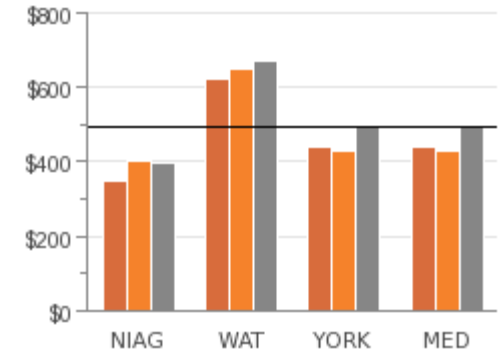
## What is the total cost for the treatment of drinking water?

Fig 22.7 OMBI Total Cost for the Treatment of Drinking Water per Megalitre of Drinking Water Treated (includes amortization)

Integrated Systems (In Thousands)



Two-Tier Systems



2009	\$397	\$248	\$334	\$372	\$184	\$179	\$1,375	\$252	\$651	\$386	\$256	\$302	N/A	\$318		\$350	\$621	\$438	\$438
2010	\$521	\$247	\$349	\$390	\$185	\$162	\$1,375	\$284	\$571	\$517	\$198	\$265	\$446	\$349		\$402	\$651	\$431	\$431
2011	\$620	\$247	\$363	\$562	\$214	\$205	\$1,475	\$269	\$515	\$577	\$223	\$284	\$453	\$363		\$395	\$673	\$494	\$494

Source: WATR310T (Efficiency)

Note: Calculation includes amortization.

Comment: Costs include operation and maintenance of treatment plants as well as quality assurance and laboratory testing to ensure compliance with regulations.