35 Wastewater

What is the Service?

The goal of Wastewater Services is the safe and effective collection, treatment and disposal of wastewater. Treatment standards established by provincial and federal agencies ensure that the impact of wastewater treatment on the natural environment is minimized.
Specific objectives include:

- Efficient and effective collection of wastewater from customers via the municipal sewage systems, operation of wastewater treatment facilities and disposal of wastewater in accordance with federal and provincial regulation
- Maintaining adequate capacity for existing communities and future developments

Wastewater services are provided to residential and Industrial, Commercial and Institutional (ICI) sector customers. The quality of wastewater discharged into the municipal sewage system is controlled through municipal sewer-use by-laws. Funding for wastewater services is generally through municipal water rates, which usually include a sewer surcharge based on water usage to recover the costs of wastewater collection and treatment.

Influencing Factors:

Age of Infrastructure: Age and condition of wastewater collection system and frequency of maintenance costs.

Government Structure: Single-tier service providers with jurisdiction over the wastewater system vs. two-tier system where the responsibility for wastewater service is divided between the local municipalities and the Regional municipality.

Policy and Practices: Frequency of wastewater collection system maintenance activities, collection system age, condition and the type of pipe material.

Supply and Demand: Respective volume of wastewater generated relative to the total system demand. The quantity of wastewater flows from ICI sectors relative to residential demand.

Treatment Plants: Number, size and complexity of the wastewater collection systems and treatment plants operated.

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

Additional Information:

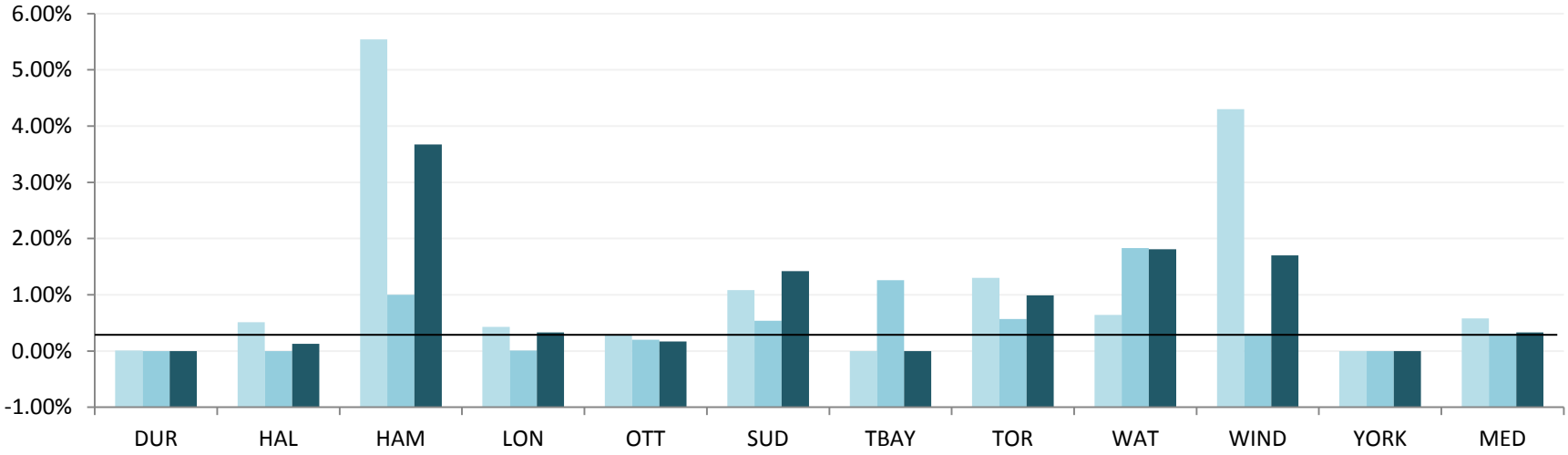
Integrated Systems: *The term applies to those Cities and Municipalities that have full responsibility for all wastewater activities including collection, conveyance, treatment and disposal.*

Two-Tier Systems: *The term applies to those Municipalities that have responsibility for components of wastewater activities, e.g. Niagara, Waterloo and York are responsible for all components with the exception of collection which is the responsibility of local municipalities (lower-tiers) within their boundaries.*

Wastewater

How much wastewater bypasses treatment?

Fig 35.1 Percent of Wastewater Estimated to have Bypassed Treatment



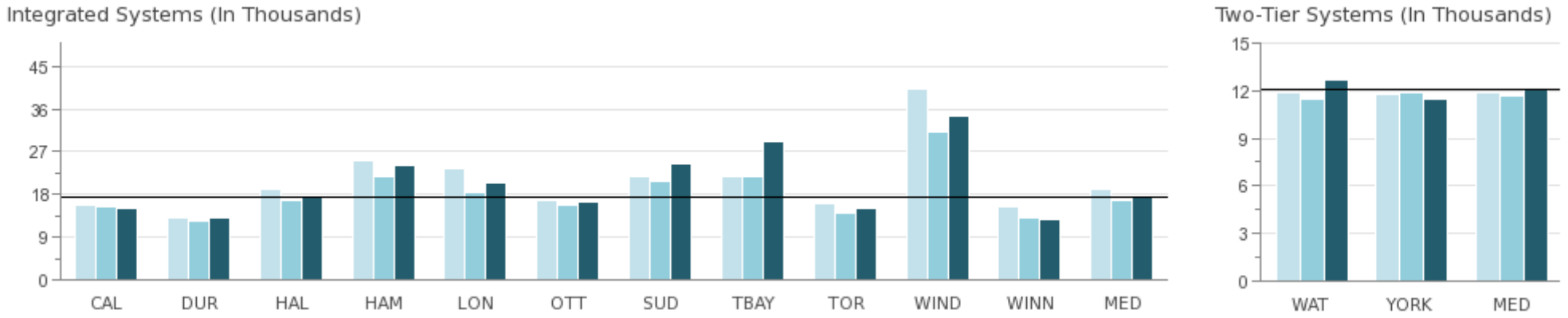
2011	**0.01%**	**0.51%**	**5.54%**	**0.43%**	**0.28%**	**1.08%**	**0.00%**	**1.30%**	**0.64%**	**4.30%**		**0.58%**
2012	**0.00%**	**0.00%**	**1.00%**	**0.01%**	**0.20%**	**0.54%**	**1.26%**	**0.57%**	**1.83%**	**0.31%**	**0.00%**	**0.31%**
2013	**0.00%**	**0.13%**	**3.67%**	**0.33%**	**0.17%**	**1.42%**	**0.00%**	**0.99%**	**1.81%**	**1.70%**	**0.00%**	**0.33%**

Source: WWTR110M (Community Impact)

Note: Frequency and severity of weather events can have a significant negative impact results.

How much wastewater is treated in each municipality?

Fig 35.2 Megalitres of Treated Wastewater per 100,000 Population



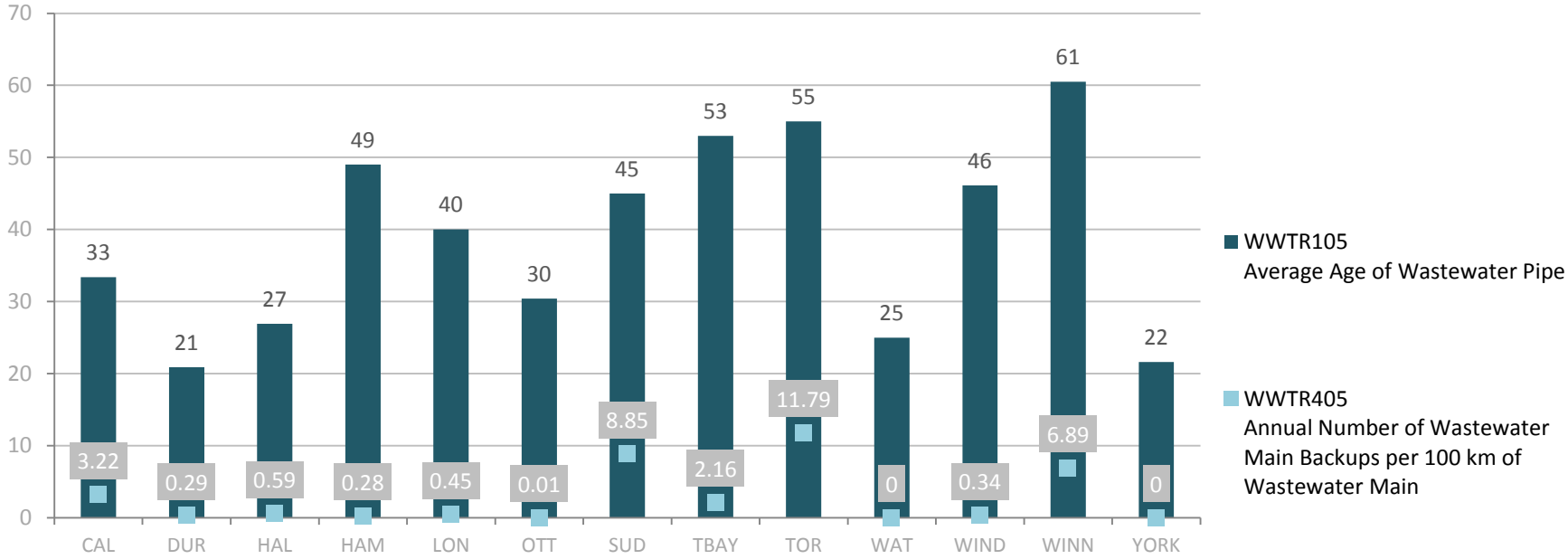
2011	**15,793**	**13,020**	**19,224**	**25,261**	**23,583**	**16,648**	**21,760**	**21,741**	**16,236**	**40,066**	**15,546**	**19,224**	**11,876**	**11,806**	**11,841**
2012	**15,272**	**12,517**	**16,778**	**21,762**	**18,347**	**15,641**	**20,754**	**21,636**	**14,163**	**31,269**	**13,076**	**16,778**	**11,482**	**11,836**	**11,659**
2013	**15,222**	**13,241**	**17,426**	**24,134**	**20,380**	**16,450**	**24,586**	**29,218**	**14,960**	**34,464**	**12,775**	**17,426**	**12,627**	**11,444**	**12,036**

Source: WWTR210 (Service) Level)

Note: Refer to additional information regarding integrated vs. two-tier systems. Calculations include residential and ICI sectors.

What is the number of wastewater main back-ups relative to the average age of wastewater pipes?

Fig 35.3 Average Age of Wastewater Pipe and Number of Wastewater Main Back-ups per 100 Km of Wastewater Main



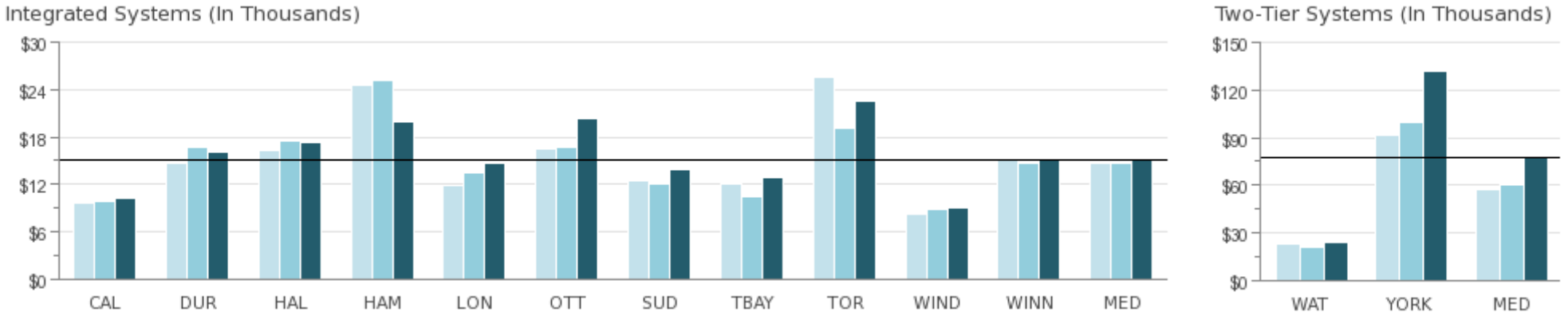
Source: WWTR 105 (Statistic); WWTR405M (Customer Service)

Note: Average Age of Wastewater Pipe: Older wastewater pipes are often in poor condition and contain cracks, leaking joints and broken sections, contributing to increased pipe blockages and an inflow of groundwater into the system causing an excess capacity to the system. These factors result in an increased frequency of wastewater main back-ups relative to newer systems that do not have such deficiencies incurring higher maintenance costs for older systems.

The annual number of wastewater backups is directly related to the design of the wastewater pipe and the design of the wastewater collection system, i.e. the extent to which storm sewers are connected to or combined with sanitary sewers resulting in increased flow. Design criteria, age and condition of the wastewater collection infrastructure combined with localized major precipitation events can result in flows that exceed system capacity, resulting in wastewater backups.

What is the total cost of wastewater collection and conveyance?

Fig 35.5 OMBI Total Cost of Wastewater Collection / Conveyance per Km of Pipe (includes amortization)



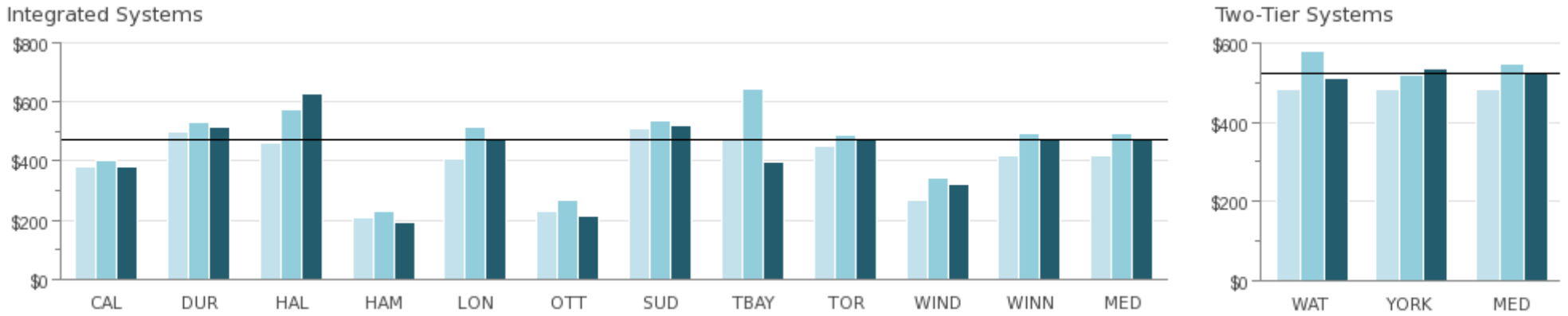
2011	**$9,570**	**$14,746**	**$16,342**	**$24,513**	**$11,777**	**$16,539**	**$12,565**	**$12,161**	**$25,459**	**$8,172**	**$14,997**	**$14,746**		**$23,626**	**$91,568**	**$57,597**
2012	**$9,781**	**$16,705**	**$17,551**	**$25,107**	**$13,543**	**$16,645**	**$12,143**	**$10,512**	**$19,035**	**$8,921**	**$14,748**	**$14,748**		**$21,540**	**$99,177**	**$60,359**
2013	**$10,214**	**$16,023**	**$17,245**	**$19,933**	**$14,726**	**$20,299**	**$13,913**	**$12,922**	**$22,627**	**$9,059**	**$15,050**	**$15,050**		**$23,683**	**$131,552**	**$77,618**

Source: WWTR305T (Efficiency)

Note: Refer to additional information regarding integrated vs. two-tier systems. The amortization component can vary significantly from year to year depending on the type of infrastructure, capital fund expenditures, etc.

What is the total cost for the treatment and disposal of wastewater per megalitre?

Fig 35.6 OMBI Total Cost for Treatment/Disposal per Megalitre Treated (includes amortization)



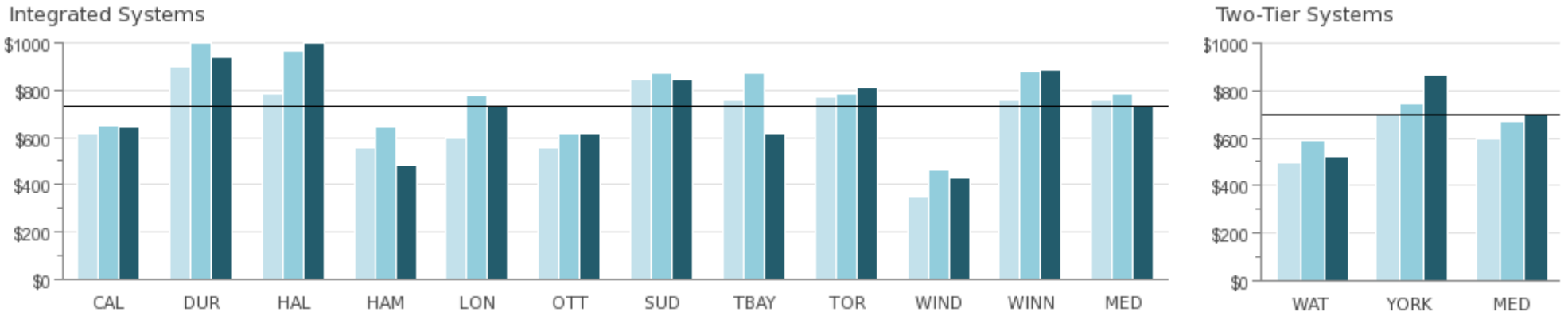
2011	**$379**	**$497**	**$460**	**$209**	**$409**	**$233**	**$511**	**$476**	**$448**	**$267**	**$420**	**$420**		**$483**	**$483**	**$483**
2012	**$401**	**$533**	**$572**	**$230**	**$515**	**$267**	**$535**	**$641**	**$487**	**$344**	**$492**	**$492**		**$579**	**$517**	**$548**
2013	**$383**	**$514**	**$629**	**$191**	**$474**	**$215**	**$520**	**$396**	**$477**	**$323**	**$480**	**$474**		**$510**	**$537**	**$524**

Source: WWTR310T (Efficiency)

Note: Refer to additional information regarding integrated vs. two-tier systems. The amortization component can vary significantly from year to year depending on the type of infrastructure, additions and disposals of capital assets, capital fund expenditures, etc.

What is the total cost for the treatment/disposal and collection/conveyance per megalitre?

Fig 35.7 OMBI Total Operating Cost of Wastewater Treatment/Disposal and Collection / Conveyance per Megalitre



2011	**$619**	**$897**	**$782**	**$555**	**$599**	**$556**	**$844**	**$761**	**$770**	**$351**	**$757**	**$757**		**$495**	**$697**	**$596**
2012	**$651**	**$997**	**$966**	**$643**	**$779**	**$615**	**$873**	**$871**	**$782**	**$460**	**$881**	**$782**		**$593**	**$744**	**$669**
2013	**$642**	**$937**	**$999**	**$485**	**$730**	**$620**	**$848**	**$618**	**$813**	**$432**	**$886**	**$730**		**$524**	**$864**	**$694**

Source: WWTR315T (Efficiency)

Note: Refer to additional information regarding integrated vs. two-tier systems. The amortization component can vary significantly from year to year depending on the type of infrastructure, additions and disposals of capital assets, capital fund expenditures, etc.