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Hosing Homebuyers: Why Cities Should Not Pay For Water and Wastewater Infrastructure with Development Charges

by
Benjamin Dachis

- Many Canadian municipalities impose development charges on homebuilders – around \$80,000 per single-detached home in some large Canadian cities. These fees have been rising in recent years, in the process worsening housing affordability since they are ultimately passed on to homebuyers in the form of higher home prices.
- The largest single component of these charges in most municipalities is for water and wastewater construction. After examining the shortcomings of this funding approach for water infrastructure, I find cities would be better to charge for these services based on actual use, as is common in electricity and natural gas, instead of through high up-front fees.
- Municipalities should create region-wide utilities that can take advantage of the scale economies available in the sector.
- Provinces should also create independent regulators to ensure that cities, and potential private water and wastewater utilities, are setting appropriate prices and meeting environmental standards.

Housing affordability is an important issue in Canadian cities. And so is finding money to pay for much-needed infrastructure. Municipalities often frame development charges (DCs) as a painless way of paying for new infrastructure without increasing taxes. Developers paid \$2.4 billion directly to Ontario municipalities in 2016.¹ Cities across Canada are also increasing their DCs. As a recent example, the City of Toronto enacted a plan in mid-2018 to increase development charges for various kinds of homes. Development charges for a single-detached house are set to increase from less than \$20,000 in 2012 to over \$80,000 in 2020 (Toronto 2018).

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1 Based on author calculations from Ontario Ministry of Municipal Affairs and Housing, Financial Information Return Schedule 61.



Most DCs are passed on to homebuyers through higher home prices that reflect the cost of the DCs. In this E-Brief, I look at how much and why municipalities rely on homebuyers to fund new infrastructure. I find many Canadian municipalities are overly reliant on homebuyers as a way to pay for new infrastructure. For infrastructure supported by user fees, like water or wastewater services, municipalities should eliminate up-front costs on homebuyers and instead charge the full cost to end users.

The largest single component of these charges – ranging from 20 percent of total charges in built-out cities like Toronto and Ottawa to 50 percent in some suburban GTA areas – is for water and wastewater construction. It would be better to charge for these services based on actual end use, as is common in the cases of electricity and natural gas, instead of through up-front fees. Removing development charges for water and wastewater and charging consumers only on end use would better reflect the actual use of water, leading to less overconsumption of water as well.

Further, provinces should empower a province-wide safety and price regulator to oversee all water operators in the province. With such a regulator in place, municipalities would have more flexibility to contract out, or have private investment in, their services for water and particularly wastewater.

Development Charges

One of the single largest capital financing tools for municipalities are charges on homebuilders, often called impact fees, or, more commonly in Canada, development charges. (In Alberta, they are called offsite levies and in B.C., development cost charges.)

The Economics and Politics of Development Charges

Developers pay DCs to compensate municipalities for the cost of building municipal infrastructure that services homes and commercial properties in a newly developed area. That is, growth pays for itself. DCs only apply to projects that will require the city to provide more services. For example, the expansion of a house, which does not increase the number of housing units, would in most instances not incur a DC. Municipalities can also charge DCs in specific areas and for specific kinds of development.

In theory, an ideal development charge would reflect the incremental (marginal) cost of building new infrastructure (Blais 2010): the end users who benefit from a service would be the ones who pay for it. Some municipalities differentiate DCs based on whether development is in an entirely new area or within the existing urban growth boundary. Such differentiation is a move towards matching beneficiaries with costs. Development charges also often differ by parts of the municipality. However, these types of up-front financing create an incentive for a household to make heavy use of the infrastructure, such as roads or water, once built, which leads to congestion or the overuse of water.

Empirical evidence shows that new homebuyers pay almost all development fees. Dachis and Thivierge (2018) show that, holding all other factors constant, every 10 percent increase in the average development charge on a new single-detached dwelling in Ontario municipalities is passed on through a 0.45 percent increase in home prices. Recent studies of similar fees in US municipalities have found that up-front charges on homes are added to home prices to varying degrees, ranging from 83 percent to over 500 percent of the costs of DCs. Most studies show at least 100 percent of DCs are embedded in house prices.² This rise in home prices reflects,

to some extent, real value added to the house by the new amenities. That is, a municipality is charging fees so that it can build or improve infrastructure that can be used by the residents. However, the price increase from widely used amenities – like parks – often accrues to all homeowners in the city, not just newcomers who are paying development fees.

The up-front cost of all DCs presents a potential equity concern, to the extent that new homebuyers have to pay up front for all development costs while existing homebuyers can get a free ride. And to the extent that development charges are embedded in resale prices, in competitive markets, the price increase will spread to all houses whether or not development charges were paid on a property – resulting in a pure windfall for previous generations of homebuyers already living in a municipality with DCs.

Development fees are politically popular because they are portrayed as money paid by developers rather than by homeowners, who have little appetite for increased property taxes. In supporting DCs, municipal voters are often endorsing policies that will increase the resale values of their homes at minimum cost to themselves (Fischel 2001). Particularly when local governments collect little future revenues from new growth, DCs may increase the political support for building new homes, which usually faces incumbent homeowner opposition.³ For example, if a municipal government does not collect revenues to finance infrastructure, such as by increasing property taxes on new homes, incumbent residents will know that new housing developments will increase their taxes, and they will oppose new development. DCs may end up strengthening political support for increasing housing supply by making new amenities and/or lower taxes for incumbent residents conditional on the city approving new housing (Cheshire 2017, Burge and Ihlanfeldt 2006).

What Municipalities Collect from Builders

Provincial legislation lays out the authority for municipalities to set DCs, but municipalities enact specific bylaws to guide their application. DCs can be as high nearly \$80,000 in some Greater Toronto Area municipalities for a single-detached house in a new development area (Figure 1a). The average DC in the Greater Toronto Area has steadily increased from \$45,000 in 2012 to \$60,000 in 2016. As mentioned above, the City of Toronto has enacted a recent bylaw that will see DCs increase to over \$80,000 for a single-detached house by 2020.

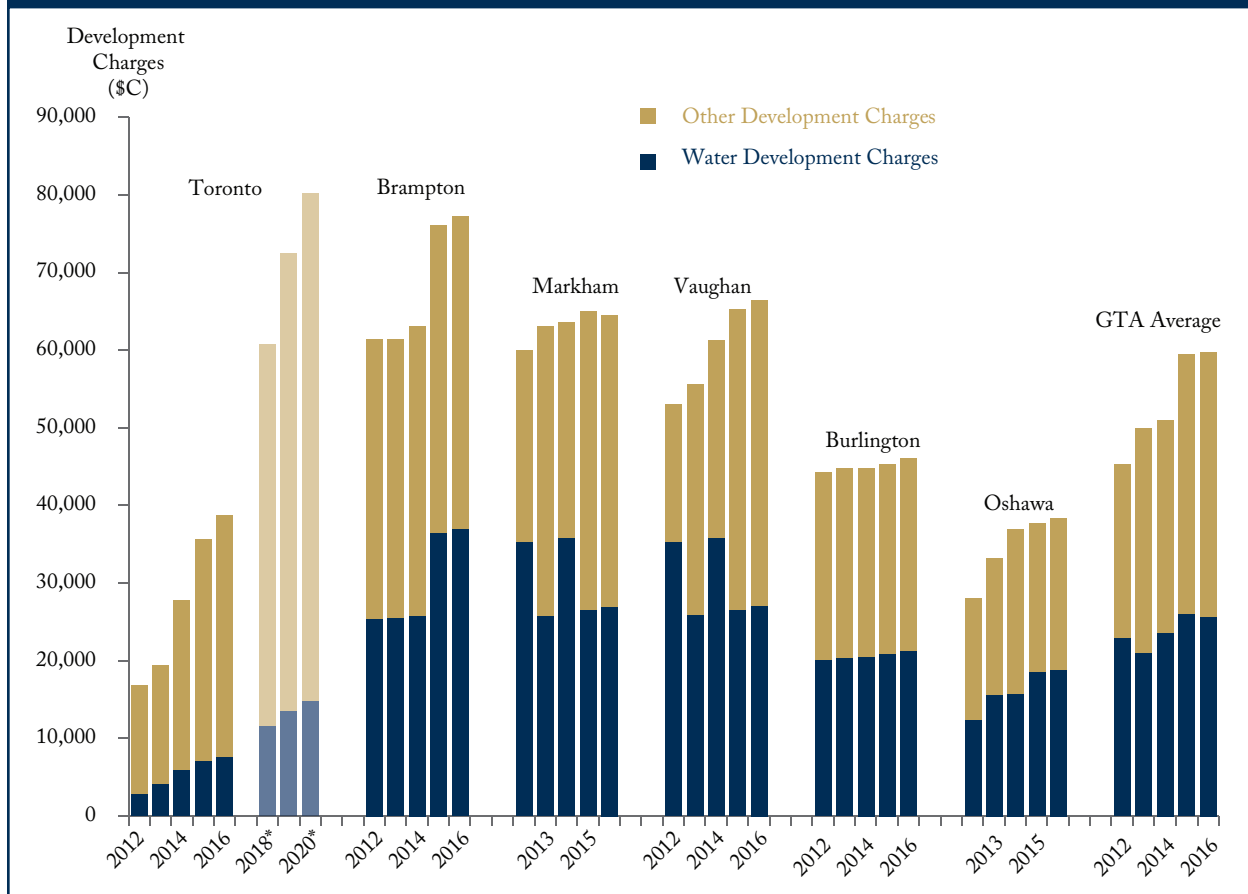
Major cities elsewhere in Canada have much lower DCs, ranging from just over \$20,000 in Calgary to between \$30,000 and \$35,000 in cities such as Hamilton, Ottawa, and Surrey (Figure 1b). Quebec has not granted municipalities the right to levy DCs. The City of Winnipeg introduced a development charge on construction projects that began after May 1, 2017 (City of Winnipeg 2018).⁴ Edmonton has set DCs for non-water infrastructure, but developers enter into service agreements with the city for the cost of developing new water infrastructure. Across Canada, the largest single component of DCs comprises water, wastewater and sewer

2 See, for example, Evans-Cowley et al. (2009); Mathur (2007); Mathur, Waddell, and Blanco (2004); and Ihlanfeldt and Shaughnessy (2004).

3 Incumbent homeowners often oppose new development because new housing creates competition in the homeowner's resale market, thus lowering the investment value of existing homes.

4 The City of Winnipeg set the initial fee at \$57.47 per square metre. For the average Winnipeg single-detached home of 125 square metres, that amounts to about \$7,200 in development charges.

Figure 1a: Development Charges on New Single-Detached Housing in Select Greater Toronto-Area Cities, 2012-2016



Notes: DCs include DCs from both upper-tier and lower-tier governments. I take the top total and water-related charges in calculating DC amounts when a municipality levies multiple charges (for example, by area of the municipality). GTA average is calculated as the weighted mean of development charges, where the weight is the number of newly constructed single-detached units in a given year. The average excludes Mississauga due to its stormwater charge policy, which is not calculated per housing unit.

*Future Toronto amounts are from City of Toronto (2018).

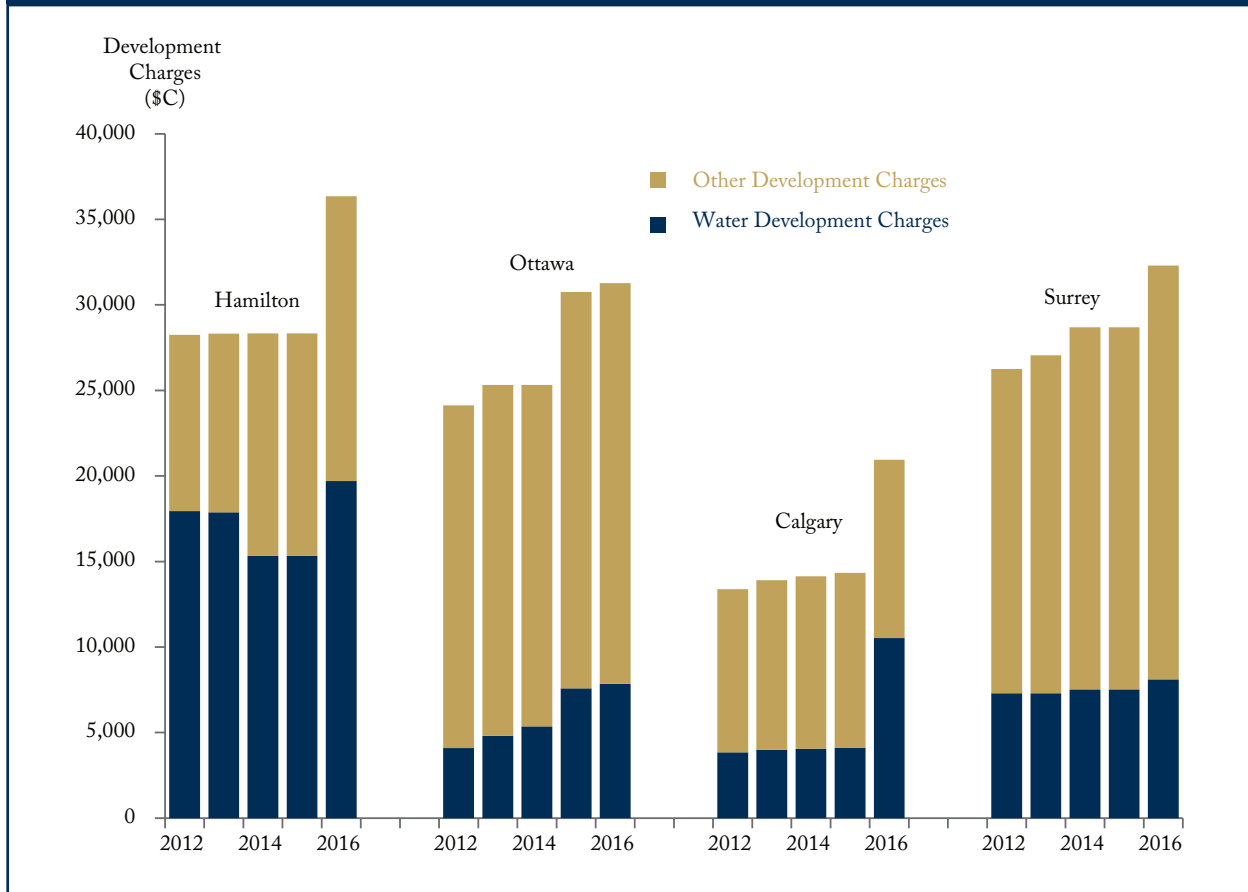
Source: Author's calculation from Financial Information Return Schedule 62.

infrastructure (which I combine as water DCs). Water DCs range from as little as 20 percent of total DCs in cities like Toronto or Ottawa that have largely developed their water infrastructure, to 50 percent or more of the total DCs in spreading suburban municipalities.

What Municipalities Build

Municipalities collect DCs before construction and place the funds into dedicated reserves. Municipalities then spend the reserves over time, as the city gradually expands the services for which it collected fees. Therefore, municipalities are collecting funds from developers and not developing subsequent infrastructure with those funds on a timely basis. From 2010 to 2016, Ontario municipalities collected \$11.1 billion in total DCs, \$4.3 billion of which was dedicated for water infrastructure (Figure 2). However, just over half of what municipalities

Figure 1b: Development Charges on New Single-Detached Housing in Select Cities, 2012-2016



Notes: DCs include DCs from both upper-tier and lower-tier governments. I take the top total and water-related charges in calculating DC amounts when a municipality levies multiple charges (for example, by area of the city).

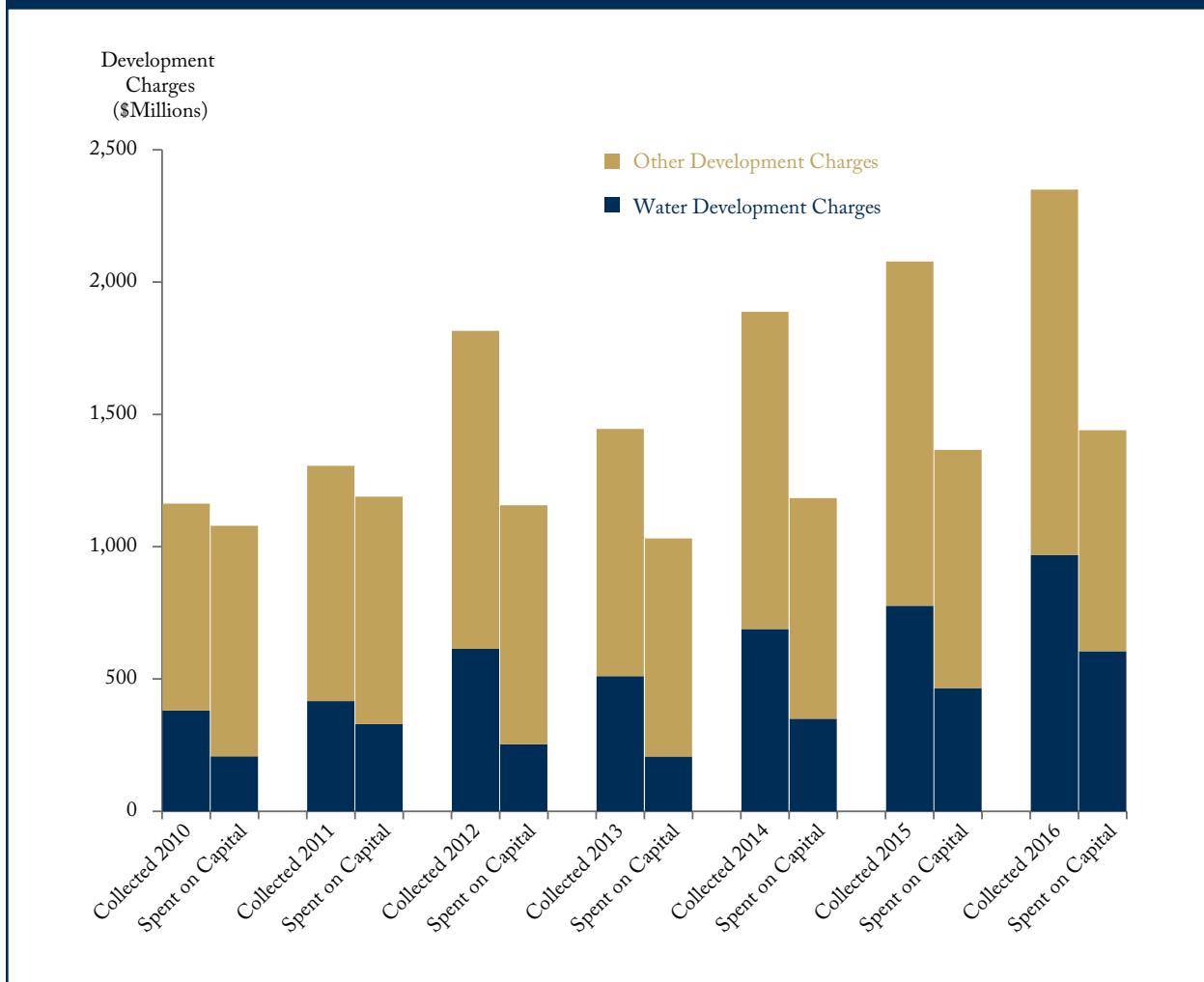
Source: Author's calculation from Financial Information Return Schedule 62 for Ontario cities; municipal website for other cities.

have collected in water DCs, or \$2.4 billion, has gone to capital expenditure on water, resulting in \$1.9 billion in unspent DCs meant for water infrastructure. In contrast, municipalities have spent about 80 percent of the DCs they have collected for other types of assets on related capital investments.

In addition to monetary DCs, municipalities sometimes ask developers to build capital assets themselves and then hand them over to municipalities after completion as part of a subdivision development agreement. Municipalities refer to these as 'in kind' or 'donated assets.'⁵ Alberta breaks out donated capital assets in the

5 Because these donated assets are not cash items, municipal budgets, which operate on a cash budgeting system ignore the value of these assets granted to them by developers. Donated assets only appear in municipal end-of-year financial statements and in province-wide statistics that are collected on an accrual accounting system. For more information on these accounting differences, see Dachis, Robson and Tsao (2016).

Figure 2: Development Charges Collected and Spent on Capital, Ontario Municipalities 2010-2015



Notes: 'water' includes water, wastewater, and sewers.

Source: Author's calculation from Ontario Financial Information Return Schedule 61.

water and wastewater sector as a share of the total capital additions that municipalities made to their services. More than one-third of the value of wastewater capital additions in 2015 in Alberta was through donated assets (\$384 million), as were 20 percent (\$95 million) of water investments. However, I do not include such donated assets in the remaining analysis.

Table 1: Profile of Ontario and Alberta Water and Wastewater Utilities, 2015

	Water		Wastewater	
	Ontario	Alberta	Ontario	Alberta
Annual Operating Cost	\$2.2 billion	\$599 million	\$2.6 billion	\$689 million
Annual Operating Cost per Household	\$346	\$360	\$370	\$438
Total Capital Additions	\$1.8 billion	\$506 million	\$1.6 billion	\$965 million
Total User Fees	\$2.3 billion	\$667 million	\$2.4 billion	\$729 million
Average Households Served	20,648	6,067	23,148	6,607

Note: Edmonton's water utility, but not wastewater, is provided by Epcor, which is not included in municipal statistics.

Source: Author's calculations from Ontario Financial Information Return and Alberta Municipal Affairs Municipal Financial & Statistical Data.

Water and Wastewater Services in Alberta and Ontario

Water and wastewater are among the largest operating costs, and the largest capital expenditure (30 percent of Ontario municipal capital investment, and 26 percent among Alberta municipalities in 2015), of Canadian cities.⁶

The Cost of Water and Wastewater Services

Ontario and Alberta provide comprehensive data regarding their water and wastewater utilities. For Ontario, the total 2015 operating cost, which includes the share of municipal-wide administrative costs attributable to water and wastewater utilities and the annual amortization of existing capital assets, was \$2.2 billion for water services and \$2.6 billion for wastewater (Table 1). Alberta spent \$600 million in water services and nearly \$700 million on wastewater. For both provinces, the total annual cost per household of these services ranges from \$346 to \$360 for water services and from \$370 to \$438 for wastewater. In addition, Ontario municipalities spent \$1.6 billion on wastewater infrastructure in 2015 and \$1.8 billion on water. Alberta spent \$965 million and \$506 million, respectively.

Municipalities are collecting user fees approximately equal to the annual operating cost of water and wastewater utilities. As for their capital expenditures on water and wastewater, municipalities have funded them through two main sources: development charges, as discussed above, and capital grants from other levels of government. Between 2009 and 2015, Ontario municipalities received about \$200 million in operating grants

⁶ In this section, I separate drinking water and wastewater services. I combine water treatment, collection and transmission in a single 'water' category. I include all sewer services, and wastewater collection, treatment, conveyance, and disposal in a single 'wastewater' category. Municipalities are increasingly providing storm sewers on a separate basis. However, it is difficult for me to identify the extent to which municipalities provide these on a fully separate basis from wastewater.

dedicated to water or wastewater from the province and the federal government, and nearly \$2 billion in dedicated federal and provincial capital grants.

Reforming Development Charges and Water and Wastewater Services

Municipalities can reduce the cost of new housing by replacing DCs with full-cost user pricing and also reduce the cost of water services by achieving greater economies of scale. Municipalities and provinces can better meet the goals of optimal pricing and lower costs through scale economies. To do so, they should create standalone utility corporations to operate regionally under the watchful eye of independent regulators.

Building Bigger, and More Efficient, Water and Wastewater Systems

The average size of utility providers or organizations is small in both provinces, with the average utility having less than 25,000 customers in Ontario and less than 10,000 in Alberta.⁷ Water utilities require substantial investments in water treatment facilities, and the network economies of a single pipe system make these systems a natural monopoly in which the larger the scale of the service, the more efficient the operation. Just as there are scale economies, to a point, in the Ontario electricity sector (see Fyfe, Garner, and Vegh 2013), there are clear economies of scale in the water and wastewater sector around the world, such as in England (Bottasso, and Conti 2009), Portugal (Cunha Marques and De Witte 2011) and Australia (Worthington and Higgs 2014), to give just a few examples.

Forced utility consolidation, such as was done through top-down municipal amalgamation (Bish 2001) or proposed forced mergers in the Ontario electricity sector (Fyfe, Garner and Vegh 2013), are unlikely to reduce costs. Instead, a cooperative regional model in which individual municipalities elect to take part in a special-purpose body that consolidates the activities of a group of utilities is most likely to lead to savings (Spicer and Found 2016). One example of creating an overarching, region-wide service provider is Aquaterra in Grand Prairie, Alberta, which has combined the water services of both the City of Grand Prairie and the broader regional government and a nearby smaller town.

Another option is for provinces to allow municipal governments to create special-purpose government bodies. These are common in parts of the United States and are known as Municipal Utility Districts. These districts are able to issue bonds to finance local infrastructure investments that future residents of new areas pay for in the future, such as through property taxes. These districts are most appropriate to replace non-user-fee based services included in development charges.⁸

Getting Pricing Right

Many municipalities have started to cover the historical capital costs and other operating expenses of water and wastewater through user fees (Table 1). Without the need for capital renewal, that would be an ideal pricing

7 This measure of the 'average' utility size sums the total number of customers in the province and divides by the total number of utilities. The median utility size, the utility in which half of the utilities are larger or smaller is considerably smaller in each province.

8 For more details on the basics of such districts, see <http://www.austintexas.gov/edims/document.cfm?id=227002>.

model: those who benefit from an asset are those who pay for it. However, municipalities are investing heavily in new assets. Only if municipalities charge the full cost of both annual operations and amortization will consumers pay the full cost of water assets. When customers pay the full cost of using an asset on a life-cycle basis, they are making the choice of consuming the right amount of water every time they turn on the taps or flush their toilet. Charging less than the full cost results in households over consuming water.

However, full-cost pricing is incompatible with the current system of financing capital infrastructure up front with DCs. New homebuyers would be paying twice for the up-front capital investment through DCs and an annual amortization expense embedded in user fees. Similarly, capital grants from other levels of government discourage municipalities from charging the full cost of every litre of water. Higher levels of government should not be giving grants for water and wastewater infrastructure to municipalities that can charge users the full cost of water. Part of the reason that municipalities seek up-front revenue in place of long-term finances is the manner in which municipalities budget (Dachis, Robson and Tsao 2016). Up-front cash from DCs and capital grants looks appealing when municipalities use cash budgets and the imperative is to match cash inflows with cash outflows, not necessarily the future flow of the benefits from the infrastructure that future generations will receive. Provinces should change their existing municipal act provisions on budget presentation to enable municipalities to present budgets on an accrual basis.

Municipalities should eliminate DCs for water and wastewater and instead levy full-cost user fees that cover the full cost of amortized capital (as argued by Clayton 2014). This is the pricing model that private and municipally owned utilities in the natural gas and electricity market have used for decades without relying on up-front fees. Municipalities could move to such a system for new developments, which would improve housing affordability. If households have the same time value of money as the interest rate paid to finance the up-front investment, the cost to consumers in the long run will be the same. If interest rates are lower than the value that households place on the future value of money today, the net costs to households will be lower in the long run.

Quebec, which does not use DCs, collects water-related property taxes on a per-building-lot or per foot-of-frontage calculation. This leads to higher property taxation, but only in the new developments that would otherwise be subject to high water-related DCs in other provinces. This also ensures that infrastructure is modest in its design and cost and financed over its useful life, or the term of the financing, to defray the initial capital costs. Rather than adopt such long-term financing via the property tax base, which does not encourage water conservation, municipalities elsewhere in Canada can achieve the same outcome as long-term financing with per-use pricing.

Enabling Public or Private Utilities to Provide Water and Wastewater Services

A major impediment to reform of water and wastewater services is that in many municipalities they are line-item operations. That is, they are indistinguishable from other city services. Some cities, such as Windsor (EnWin), Edmonton (Epcor) or Innisfil (InnServices) in Simcoe County, Ontario have moved their water services into separate corporations. These municipalities have also taken steps toward integration with local electricity companies to take advantage of economies of scope in which different businesses take advantage of similar types of billing or administrative services. Moving to a utility model can have numerous benefits: first, these services would be less likely to receive property tax subsidies; second, separate utilities would be better positioned for future mergers or cross-border agreements; and, third, utilities could practice modern accrual accounting in

their budgeting practices, which can enable full-cost recovery pricing over the life-cycle of the assets (Fenn and Kitchen 2016).

Rather than have municipalities take on debt, or push homebuyers into greater debt through DCs, institutional investors would be interested in building, owning and operating water and wastewater facility. For example, Epcor, which is owned by the City of Edmonton, provides services for other cities, as does Corix, which is owned by bcIMC, an institutional investment manager for pension plans.

Reforming Regulation

Before governments actively pursue private water and wastewater infrastructure ownership, they should create the appropriate regulatory environment. Creating an arm's-length regulatory agency for major water and wastewater infrastructure can have numerous benefits, independent of whether the asset is privately or publicly owned. Without such an independent body, governments have an inherent conflict of interest when they hold the powers of both operating infrastructure and regulating it in areas such as safety or price setting, since weaker regulatory standards make the operations easier to manage. Creating an independent infrastructure regulator – for example, the UK created Ofwat for its water sector – can both address this conflict and monitor any potential private investors.

Canadian provinces should create new regulatory bodies or expand the scope of existing regulatory bodies to cover both private and municipal water services. For example, Ontario's electricity and natural gas price regulator, the Ontario Energy Board, could be recast as the Ontario Utilities Board and have responsibility for the water sector. Similarly, the Alberta Utility Commission could be granted authority over the public water sector, as it currently does for the private water sector. These regulators could ensure that municipal governments and private operators set rates and submit financial plans that meet the public interest of long-term sustainability.⁹

Conclusion

Canadian municipalities are imposing expensive development charges that are worsening housing affordability across the country. Municipalities should replace the largest single component of these charges – financing for water and wastewater construction – with fees based on actual use of the service. Municipalities should create region-wide, standalone utilities that can take advantage of the scale economies available in the sector. Provinces should also create independent wastewater- and water-specific regulators to ensure that municipal and private water and wastewater utilities are setting appropriate prices and meeting environmental standards.

9 As Fenn and Kitchen (2016) note, this was (unsuccessfully) championed by MPP David Caplan's Private Member's Bills 13/10 and 237/10.

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Benjamin Dachis is Associate Director, Research, C.D. Howe Institute.

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