

# **Moving Forward in Hamilton: Transportation, Sprawl and Environmental Pricing Reform**

**A Discussion Paper**

**By David Thompson<sup>1</sup>**

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The City of Hamilton does not necessarily endorse the views expressed in this discussion paper. The views expressed in this paper are those of the author alone.

## Executive Summary

The City of Hamilton faces a number of serious challenges – air quality, greenhouse gas (GHG) emissions, sprawl, vacant properties downtown, and a heavy reliance on property taxes. Without changes in public policy and investment, Hamilton can expect these and other challenges to become more serious in the future. Fortunately, Hamilton is well positioned to make changes and there seems to be a willingness to think big about solutions. By doing so, Hamilton can fulfill its potential for a stronger and more diversified economy, as well as a greener and healthier city.

This paper examines the economic incentives that result in the challenges outlined above and how those incentives can be re-shaped by municipal policy – a process termed “environmental pricing reform.”

Price is a powerful motivator, for both businesses and individuals. The economics are simple: when the price of a thing goes up, less of it is purchased; when the price goes down, more is purchased. This is the law of supply and demand.

Often, prices are lower for goods and services that cause environmental harm than for greener options. This price discount is often artificially created by externalities and results in excessive consumption of those goods and services, creating excessive environmental harm.

Fortunately, this can be changed. Prices can be adjusted by government in order to boost or reduce the purchase of various things. This is quite a common practice – e.g. RRSP tax incentives that boost retirement savings or tobacco taxes that (very effectively) reduce youth smoking. In addition to retirement planning and health promotion, price adjustments are carried out in order to reward and incentivize decisions that benefit the environment.

If we want to achieve environmental goals, it makes sense to align market prices with those goals. When prices are pulling against environmental programs, those programs face a serious handicap. When prices are pulling in the same direction, those programs are far more likely to succeed. It’s also fairer to make green choices cheaper or more profitable; after all why should those who want to do the right thing be financially penalized for it?

Municipal governments can employ environmental pricing reform (EPR) instruments to alter the pricing structure in a wide range of areas, such as:

- Waste disposal – sewage and solid waste charges, and recycling subsidies;
- Transportation – road user fees, parking fees, and transit subsidies;
- Land use – development and ownership cost adjustments; and,
- Utilities – progressive billing for water and electricity.

EPR instruments can be designed in ways that ensure fairness and protect lower-income people – a high priority for Hamiltonians. For example, a water rate can be designed to provide a basic amount at a low rate, or even for free, with higher rates kicking in for larger and excessive amounts. Such a shift would also likely be positively received; public opinion research suggests that voters are willing to pay for public services and programs, but would like municipalities to explore revenue sources other than property taxes.

The costs of motoring are significant. Smog kills hundreds and costs billions of dollars in Southern Ontario each year, due to increased health costs, absenteeism, and lost productivity. The majority of pollution exposures of Hamilton citizens are due to vehicles. Collisions cost hundreds of millions of dollars in Hamilton each year and represent a fraction of the total range of transportation costs.

Likewise, sprawl – development encroaching on agricultural or natural areas – creates a number of problems. It reduces the feasibility of transit; locks in motor vehicle dependency; hollows out established core areas; eats up agricultural land and livelihoods; commits municipal government to major future financial liabilities; and, creates financial risks for suburban homeowners (and therefore municipalities) as the age of cheap oil passes.

Hamilton, through its Growth Related Integrated Development Strategy, has established key directions for future growth that entail more sustainable transportation and containing sprawl. It is important to have prices pulling in the same direction.

Several EPR policy options can change the incentives around transportation and urban form. They can not only help pay for the costs of transportation and development, but also help *reduce* those costs by eliminating excessive demand. EPR options include:

*Road pricing:* Fuel taxes, plus all the other motoring taxes and charges, do not raise enough money to pay for the various costs of roads – design, building, maintenance, clearing, repair, decommissioning, and replacement. Moreover, the basket of motoring taxes does not begin to cover the substantial environmental and health costs of road use. Some of these costs can be covered – and reduced – by road pricing, e.g. road tolls, area tolls, dynamic congestion pricing, and high-occupancy toll lanes. Road pricing is common world-wide and there are successful examples in Canada and the United States.

Road pricing for traffic going downtown would be unnecessary, as traffic congestion in downtown Hamilton is not significant, and would likely impede the downtown recovery. Tolling regional highways and connectors, like the Lincoln Alexander Parkway, the Red Hill Creek Expressway, and some stretches of the 403 highway could be a better option. Doing so would encourage people and businesses to locate closer to their daily destinations, while raising revenues to help pay for roads and other public priorities.

*Fuel taxes:* As noted earlier, fuel taxes and other transportation-related taxes don't cover the financial costs of road transportation, let alone the environmental and social costs. Fuel taxes in North America are the lowest among OECD countries; there is significant “tax room” to increase fuel taxes.

Raising fuel-tax rates would help reduce excessive motoring and its various impacts while providing an incentive to developers to build in areas that are closer to centres and better serviced by transit. The federal and provincial governments already share some fuel-tax revenues with municipalities; higher fuel-tax rates would allow for more sharing. The sharing formulas could be tailored somewhat to help cities like Hamilton build out their transit systems more quickly.

*Transit investments:* Transit is an essential alternative to the automobile, increases the vitality of city cores and boosts infill and brownfield development, while reducing demand for sprawling greenfield development.

The City of Hamilton has committed to doubling transit ridership by 2020, and participants and speakers at the 2011 Transportation Summit emphasized that Hamilton needs the proposed light rail transit (LRT). Such transit improvements require significant investment. Hamilton will need to generate some of the funds, and bringing money to the table could give an advantage in the competition for funding. Many EPR instruments, including those discussed in this paper, also generate revenue streams that could help finance investments in transit.

*Parking pricing:* Free parking isn't free. We pay for it, one way or another – through taxes in the case of public free parking, or through higher costs for purchasers, or lower wages and profits for workers and businesses in the case of private free parking. Instead of paying through these hidden charges, which subsidize and boost automobile use and associated problems, we could pay the full costs when we use parking.

Given Hamilton's struggling core, raising prices downtown is not an acceptable option. It would be preferable to institute parking pricing at malls and employment centres across the Hamilton region, levelling the playing field between downtown and the suburbs.

*Development cost charges:* Cities levy development cost charges (DCCs) on new developments to help fund the costs that those developments impose on a city. Typically, development within a built-up, serviced area will cost the city less than development on a greenfield site where no services previously existed.

Hamilton's DCCs already offer some positive incentives, with a zero rate for development downtown, reduced rates for denser multi-family developments, and credits for brownfield developments. However, they could be improved, e.g. by providing an incentive to build in areas well-served by transit, or in denser, built-up areas of the city.

*Property tax adjustments:* With tax rates based on property values, cheaper land near the city's edge has lower taxes, providing an additional incentive for sprawl. Rates can be adjusted to provide an incentive to develop downtown, re-develop brownfield and greyfield sites, and reduce sprawl.

Currently, Hamilton's tax structure provides an incentive for development in smaller communities and rural areas instead of Hamilton proper, and in areas with poor or no transit service. This can be reversed by adjusting property tax rates.

The implementation of some (but not all) EPR tools will require amendments to provincial legislation to provide the necessary legal powers to the City. Also some tools will be more effective if there is regional cooperation. The City could band together with other cities that wish to expand their capacities and work with the Association of Municipalities of Ontario or the Federation of Canadian Municipalities to approach the provincial government.

Environmental pricing reform can help Hamilton achieve a number of its transportation and land use goals, leading to an improved quality of life for residents. It can also help diversify Hamilton's revenue streams and improve its fiscal position.

Encouragingly, there seems to be an appetite for change and innovation in Hamilton. Speakers and participants at the 2011 Transportation Summit identified the need to think big and start taking action. Areas where action could be commenced quickly include adjusting property tax and DCC rates, and developing options for levelling the playing field on parking costs across the city. Another area in which Hamilton can start taking action is the development of partnerships and a strategy to encourage the provincial government to provide it the powers needed to implement additional EPR measures.

## Introduction

Hamilton, like many cities, faces a number of challenges relating to air quality, greenhouse gas (GHG) emissions, and sprawl. The proportion of trips taken by transit dropped by half between 1986 and 2001.<sup>5</sup> Leading retailers have left downtown – both the indoor malls and the prime outdoor space. The flow to the suburban fringes has negatively affected central Hamilton, as it has many sprawling North American municipalities. Without changes in public policy and investment, Hamilton can expect these and other challenges to become more serious in the future.

At the same time, it appears that Hamilton is well-positioned to make changes. 2010 was a record-breaking year for development, with rising employment and housing starts, and a billion dollars worth of building permit construction.<sup>6</sup> The James Street North arts district, the Ottawa Street textiles and antiques district, the Farmers Market, and the Locke Street area resurgence demonstrate the potential for sustainable growth and urban revitalization.

The City also faces fiscal challenges. Like other cities, it is heavily dependent on property taxes, which are not responsive to rising incomes (i.e. revenues don't automatically increase with a growing economy, the way income taxes do). Furthermore, as other orders of government focus more on their deficits, municipal governments could be facing a future of constrained or even reduced fiscal support, and possibly even a return to the downloading of unfunded program responsibilities.

For Hamilton to address its challenges and continue to expand its resurgence, it needs to “think big,” as Mayor Bratina said at the 2011 Transportation Summit.<sup>7</sup> Hamilton can fulfill its potential for a stronger and diversified economy, and a greener and healthier city.

This paper outlines a method of analyzing the environmental and fiscal challenges faced by cities. That method is to squarely confront the economic incentives that drive behaviour and examine how some of those incentives might be changed through policy-making at the municipal government level. While this paper uses the example of transportation and urban form, the analysis is applicable to water, waste and a range of other issues.

The next section of the paper explores the concept of environmental pricing reform – the process of improving incentives and correcting market failures so that prices take environmental costs into account.

The paper then goes on to look at a number of specific EPR measures that can be taken to address transportation- and sprawl-related challenges, briefly considering the potential for introducing such measures in Hamilton.

The paper concludes with some suggestions for further research and discussion. Being a discussion paper, firm recommendations are avoided. It is anticipated that further publications will address some of these topics in greater detail.



## Environmental Pricing Reform<sup>8</sup>

Price is a powerful motivator – for both profit-maximizing businesses and expense-minimizing individuals. The economics are simple: when the price of a thing goes up, less of it is purchased; when the price goes down, more is purchased. This is the law of supply and demand.

Often, prices are lower for goods and services that cause environmental harm than for greener options. This price discount is often artificially created by externalities (see Jargon Watch: Externalities, below). This artificial discount results in excessive consumption of those goods and services, creating excessive environmental harm.

Fortunately, this can be changed. Prices can be adjusted by government in order to boost or reduce the purchase of various things. This is quite a common practice – e.g. RRSP tax incentives that boost retirement savings, or tobacco taxes that (very effectively) reduce youth smoking. In addition to retirement planning and health promotion, price adjustments are carried out in order to reward and incentivize decisions that benefit the environment.

### Jargon Watch: Externalities

In an ideal exchange in the marketplace, the full costs of producing a good or service are included in the price.

The problem is that we live in the real world, not an ideal world. So for many goods and services, the market price doesn't tell the full truth; it omits the environmental costs. An example is a factory producing widgets or thneeds<sup>9</sup> and also releasing smoke that causes illness to neighbours. The costs of ill health are not included in the price of the goods sold, but those costs are real. Such costs are said to be externalized from the market transaction, and termed 'externalities.' Such market failures create economic inefficiency and reduce real wealth.

Governments should, and do, take steps to reduce and eliminate externalities. Often they do so by regulation (e.g. limits on polluting emissions). Another way governments address externalities is by adjusting market prices to take externalities into account – through a charge, user fee, or tax. This provides an ongoing financial incentive on the producer to clean up the externality.

Pollution is a negative externality, but some externalities are positive, e.g. education and health care. These provide benefits not only to the individual involved but also to others, like employers and the broader community. In such cases, the appropriate pricing adjustment is subsidy (i.e. publicly-funded education and health care).

If we want to achieve environmental goals, it makes sense to align market prices with those goals. When prices are pulling against environmental programs, those programs face a serious handicap. When prices are pulling in the same direction, those programs are far more likely to succeed. It's also fairer to make green choices cheaper or more profitable; after all, why should those who want to do the right thing be financially penalized for it?

This process of orienting market incentives in a green direction is termed environmental

pricing reform (EPR). Municipal governments can employ EPR instruments to alter the pricing structure in a wide range of areas, such as:

- Waste disposal – sewage and solid waste charges, and recycling subsidies;
- Transportation – road user fees, parking fees, and transit subsidies;
- Land use – development and ownership cost adjustments; and,
- Utilities – progressive billing for water and electricity.<sup>10</sup>

EPR policy instruments need to be designed wisely, of course. They need to be effective (benefit the environment), efficient (cost-effective), and equitable (progressive, not harmful to those of modest incomes).

## EPR and Fairness

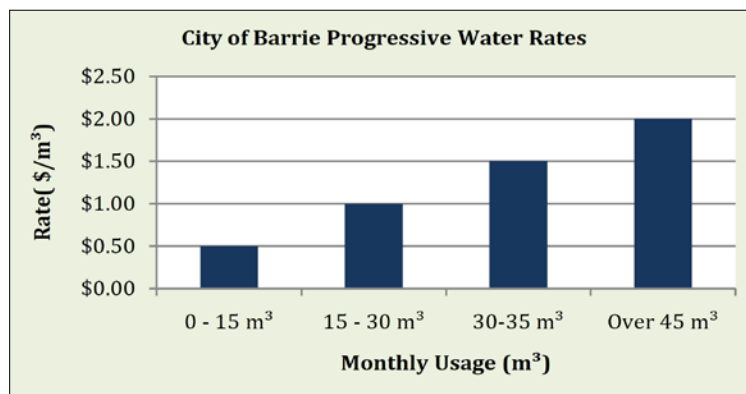
A commonly heard objection to user-pay systems is that they can be regressive, that they could hurt low-income people. Why should conservation happen at the expense of the very people who can least afford to pay?

This is worth exploring, as it can be a significant political barrier to adopting user-pay systems. It's not just low-income people who object to user-pay systems; fair-minded middle-income and high-income people often strongly resist user-pay systems that are regressive.

It is certainly true that some user-pay systems are regressive, e.g. flat utility fees – fees that are a uniform amount for every household, regardless of income or value of the house, or consumption of the services. Broadly speaking, occupants of expensive houses on large properties tend to use more electricity and water, and create more waste and sewage. A flat fee on any of these utilities generally would be regressive. Indeed, a flat fee that bore no relationship to consumption could be worse than no fee at all.

Fortunately, user-pay structures don't need to be regressive. A user-pay system can be designed both to recognize quantities used and to be progressive. For example, a water rate can have a simple "lifeline" structure, i.e. one that provides a basic monthly amount – the average needed for drinking, cooking, and sanitation – at a low price, or even for free (see figure below). Quantities used above that level could be provided at higher prices. Inclined block billing, as this is termed, is being adopted quickly across Canada.<sup>11</sup>

**Example of a progressive user fee structure**



Source: City of Barrie<sup>12</sup>

## **EPR and Politics**

Canadians like public services and are prepared to pay for them. Despite frequent fear-mongering around taxes, Canadians are not dumb; they know they need to pay for things that they value.

Consider Alberta, often touted as the most tax-hating province in Canada. Citizens of both Calgary and Edmonton (the majority of Albertans) have been surveyed annually and consistently say they would prefer to keep or expand municipal public services, rather than cut taxes.<sup>13</sup> Despite the hype, Albertans simply aren't angry about taxes.<sup>14</sup>

Similar findings prevail elsewhere.<sup>15</sup> And in a recent Hamilton poll, although 22 per cent of likely voters identified taxes as the leading issue, fully 80 per cent supported the City spending more tax dollars to reduce poverty.<sup>16</sup> (Only 35 per cent supported spending more tax dollars on a stadium, with 63 per cent opposed – demonstrating that those polled were discriminating and do have priorities.)

The lesson for EPR is that policy instruments need to be designed carefully, and that we can't make broad assumptions about what the public will or will not support.

### **Property taxes and EPR**

Environmental pricing reform instruments can be used to raise revenues for important priorities that the public wants, like transit or poverty reduction (see EPR and Politics, above). They could also be used to reduce the growth of other taxes, such as property taxes.

Property taxes are the largest revenue stream for most cities. This applies to Hamilton, where property taxes make up a larger proportion of total revenues than the next two categories combined (government grants, and user fees and service charges).<sup>17</sup> Property taxes are, however, unpopular. Quite apart from requiring city councils to go through a divisive process of setting rates every year, property taxes are regressive – requiring a greater proportion of the income of lower income earners.<sup>18</sup> In the Calgary poll noted earlier, while citizens were more supportive of tax increases than program cuts, support for user fees was at 71 per cent, while support for property taxes was only 29 per cent.<sup>19</sup>

Currently, property taxes are used to subsidize things that are provided for “free,” like roads, parking, and the costs of sprawl. Of course, such things aren't really free; we all pay for them, but the property tax system hides the costs. EPR analysis suggests that we reform the tax system, and reveal the costs.

## **EPR, Transportation and Sprawl**

Unfortunately, current transportation, development, and land-use prices are distorted by a range of subsidies. For instance, as in other cities, motorists don't pay the full costs of roads in Hamilton. Similarly, parking is often provided free of charge. Such subsidies artificially make it cheaper to drive, and therefore cheaper for individuals to locate further away from places of employment, shopping and recreation, and for businesses to locate further from suppliers and markets. These greater distances result in excessive motoring and excessive levels of the attendant emissions, collisions, congestion, and other costs.

The smog that results from burning fossil fuels causes an enormous burden of illness and has been estimated to kill 9,500 people per year in Ontario<sup>20</sup> -- far more than the number killed by all infectious diseases combined.<sup>21</sup> In Toronto alone, air pollution just from motor vehicle traffic has been estimated to kill 440 people and cost \$2.2 billion per year.<sup>22</sup> Despite emission regulations added over the decades, smog clearly remains a serious problem; while individual vehicles are cleaner, there are more vehicles on the road, driving more kilometers.

As for Hamilton, although industrial emissions have been considerable, “[t]he majority of direct air pollution exposures of Hamilton citizens are due to vehicles.”<sup>23</sup>

Motor vehicle collisions are a serious health and economic problem too. According to Transport Canada studies, the cost of collisions alone in Canada is \$15 billion to \$25 billion annually. Other studies put this figure higher – at \$63 billion annually.<sup>24</sup> Taking only the lower two estimates, Hamilton’s share would be in the range of \$300 million to \$500 million per year.<sup>25</sup> Adding to the collision costs all of the other internal and externalized costs of transportation, the total is about ten times higher.<sup>26</sup>

Intimately linked to transportation is suburban sprawl – development encroaching into agricultural or natural areas.<sup>27</sup> Sprawl, like other environmental problems, is the result of countless economic decisions made over time by businesses and individuals. The businesses and individuals involved don’t want to cause environmental harm;<sup>28</sup> they are simply responding rationally to existing price signals. Sprawl, however, creates a number of related problems:<sup>29</sup>

- Sprawl spreads out potential transit riders across large areas, thus making transit less efficient, less cost-effective, and often infeasible.
- Sprawling development results in greater distances between home and work, shopping, and other destinations, thereby locking in automobile dependency, along with resulting higher levels of emissions, traffic congestion and collisions, as well as environmental, economic, and health costs.
- By drawing money, people, and jobs out of established areas, sprawl causes a hollowing-out of existing neighbourhoods, resulting in school closures, an underperforming urban core, and derelict central lands.
- Sprawl eats up agricultural land, making local residents more dependent on imported food and eliminating rural livelihoods.
- Sprawling developments make walking and cycling to common destinations challenging, thus encouraging sedentary lifestyles that contribute to obesity, diabetes, heart disease, and higher health-care costs.
- In the long run, sprawl commits government to expanded “legacy” costs of maintenance, repair, and replacement of infrastructure – roads, utilities, redundant buildings, etc.
- As the age of cheap oil passes, sprawl will create financial risks for suburban homeowners, whose motoring costs go up at the same time as suburban properties lose value relative to urban properties. Financial risk for homeowners means financial risk for the City.

***“The age of cheap oil is over.”***

**Fatih Birol, Chief Economist, International Energy Agency – February 2011.<sup>30</sup>**

## Addressing the challenges: EPR Options for Hamilton

This section briefly outlines a few of the many policy options available to change the overall set of incentives around transportation and urban form, in order to help overcome the challenges presented by sprawl and road-related externalities and achieve Hamilton's stated revitalization goals.

Note that these EPR instruments not only help to *pay* some of the costs associated with transportation and development, they also *reduce* those costs. By providing an appropriate price signal to individuals and businesses, EPR instruments manage the demand for publicly provided infrastructure and services. When such infrastructure and services are provided for free, demand is excessive.

### Hamilton: Nine Key Directions for Revitalization

GRIDS, Hamilton's Growth Related Integrated Development Strategy, "is a planning process that helps to determine where the future growth of the City will take place over the next 30 or more years." 31 It gives guidance to the Transportation Master Plan and several other master plans. It sets out nine key directions:

**Direction #1** Encourage a compatible mix of uses in neighbourhoods that provide opportunities to live, work and play.

**Direction #2** Concentrate new development within existing built-up areas and within a firm urban boundary.

**Direction #3** Protect rural areas for a viable rural economy, agricultural resources, environmentally sensitive recreation and enjoyment of the rural landscape.

**Direction #4** Design neighbourhoods to improve access to community life.

**Direction #5** Retain and attract jobs in Hamilton's strength areas and in targeted new sectors.

**Direction #6** Expand transportation options that encourage travel by foot, bike and transit and enhance efficient inter-regional transportation connections.

**Direction #7** Maximize the use of existing buildings, infrastructure and vacant or abandoned land.

**Direction #8** Protect ecological systems and improve air, land and water quality.

**Direction #9** Maintain and create attractive public and private spaces and respect the unique character of existing buildings, neighbourhoods and settlements.

These nine directions represent a significant change for Hamilton, with a heavy emphasis on more sustainable transportation and containing sprawl. Making headway on these directions will be much easier if prices are working with other policies, instead of working against them.

The EPR options outlined here include: road pricing, fuel taxes, transit investments, parking pricing, development cost charge adjustments, and property tax adjustments. Note that this is not an exhaustive list; it is only intended to provide a few illustrations of EPR for further discussion.

## Road Pricing

Roads aren't free; they cost a lot of money to design, build, maintain, clear, repair, decommission, and replace. However, motorists don't pay the full cost (see below). This subsidy artificially encourages motoring, raising it beyond the level it would be at if motorists were charged fairly for road use. It also creates artificially high levels of political demand for new or expanded roads.

### **The true costs of roads: fuel taxes don't cover them**

There are two elements of road costs. First are the financial costs – the costs of building and maintaining roads. Fuel taxes generally fail to cover these costs. Even when added to other “user pay” taxes for transportation in North America, the whole basket of road-user taxes covers only 60 to 70 per cent of road costs, with the remainder covered by subsidies from other tax sources.<sup>32</sup>

Moreover, the existing basket of fuel and other road-user taxes fails to cover the substantial environmental and health costs of road use, which include costs arising from air pollution and CO<sub>2</sub> emissions, traffic congestion, lost productivity, and health care costs from vehicle collisions as discussed earlier.

Some of the costs of road use can be covered – and reduced – by road pricing. There are several forms of road pricing, for example:

- Road tolls and area tolls, often collected by electronic means (no toll booths);
- Dynamic congestion pricing, in which the toll rate varies in order to reduce traffic at peak hours; and,
- HOT lanes (high-occupancy toll lanes), which are road lanes converted to carpool lanes that also allow low-occupancy use upon payment of tolls.

Charging for the use of roads reduces the subsidy and could even eliminate it entirely. It also:

- provides transparency about road construction costs;
- reduces economic losses caused by traffic congestion;
- generates revenues that can be used to finance transit or serve other public priorities;
- reallocates the tax burden more fairly; and,
- reduces motor vehicle use and associated road maintenance and capital costs.

### London's Congestion Charge

The London (U.K.) Congestion Charge reduced traffic entering the central London zone by 21 per cent and raised £137 million for investment in transit expansion in 2007-08 alone. Tolls are also common in other countries (see table below).

Country	Toll roads (km)	Country	Toll roads (km)
Argentina	9,800	Japan	9,219
Brazil	856	Korea (Republic)	1,880
Canada	344	Malaysia	1,127
Chile	3	Mexico	5,683
France	6,305	South Africa	825
Hungary	57	Spain	2,255
Indonesia	530	United States	7,589
Italy	5,550		

Source: Brown, Hoover, Howatson, Schulman<sup>33</sup>

### ***The Hamilton Potential***

Hamilton does not suffer congestion in the same way or to the same extent that Toronto or many other major cities do. Downtown traffic is relatively free-flowing. Traffic is heavy on the mountain access routes during rush hour and on some of the regional highways and connectors, such as the Lincoln Alexander Parkway, the Red Hill Creek Expressway, and some stretches of the 403 highway.

Road pricing on traffic moving through downtown could help to achieve some of the broader environmental and fiscal objectives of road pricing in the short term. However, in the longer term, it would exacerbate the existing decline of Hamilton's downtown, possibly result in even greater levels of sprawl, with its associated motoring.

Road pricing on the mountain access routes could help encourage some people and businesses to locate below the escarpment. However, it is not clear that they would locate near downtown, as opposed to other areas below the escarpment that still require lengthy commutes. In addition, some might choose to locate above the escarpment, resulting in a loss of business and residential occupancy in the downtown.

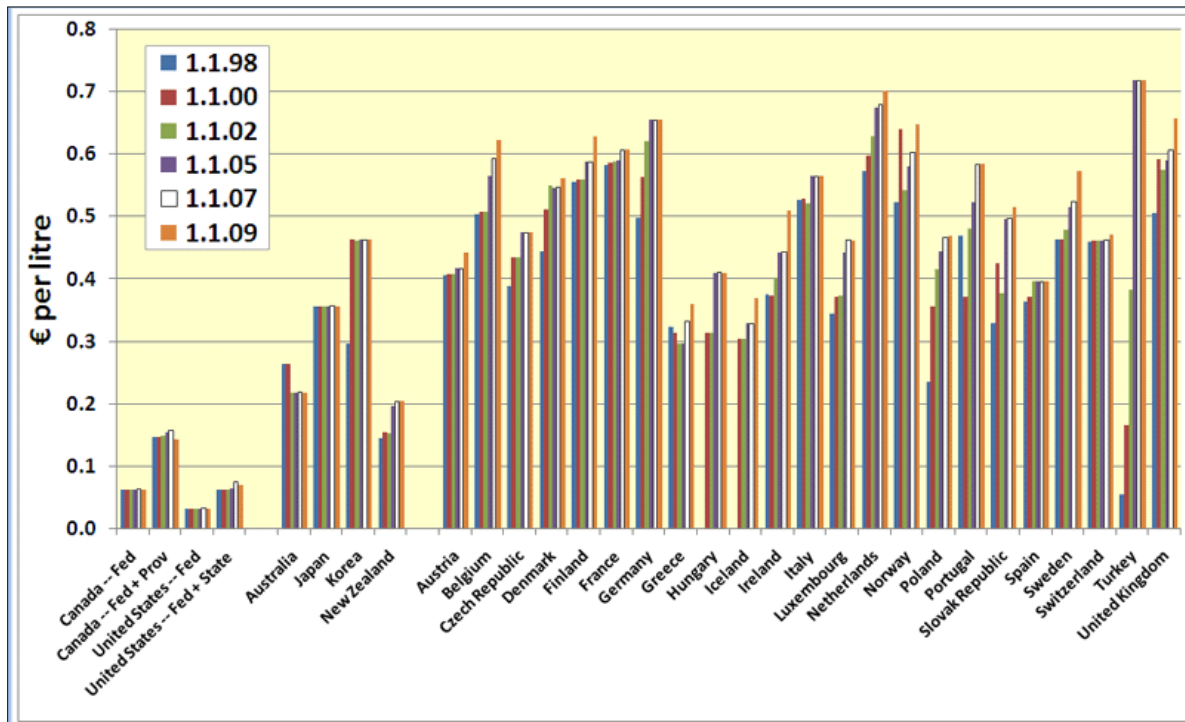
Road pricing on some of the regional highways and connectors, such as the Lincoln Alexander Parkway, the Red Hill Creek Expressway, and some stretches of the 403 highway could be a better option, encouraging people and businesses to locate closer to their daily destinations. It could also result in some traffic finding alternative routes; however, such adjustments would likely be temporary for most vehicles, as they find travel times significantly higher on those alternative routes.



## Fuel taxes

As noted earlier, fuel taxes and other transportation-related taxes don't cover the financial costs of road transportation, let alone the environmental and social costs. Fuel taxes in North America are the lowest among OECD countries (see figure below). Clearly there is significant “tax room” to increase fuel taxes.

OECD tax rates for unleaded gasoline, € per litre, 2009



Source: OECD<sup>34</sup>

### *The Hamilton Potential*

Raising the level of those fuel taxes would help reduce excessive motoring and its various impacts in Hamilton. It would also provide an incentive to developers to build in areas that are closer to centres and better serviced by transit.

While fuel taxation is under the power of provincial and federal governments, both the Ontario and the federal government share a portion of revenues with municipalities. If increases in fuel-tax rates were shared, each one-cent-per-litre increase would provide municipal revenues equivalent to a property-tax increase of one to three per cent.<sup>35</sup>

There are already mechanisms for sharing gas-tax revenues with municipalities. The Federal Gas Tax Fund provides \$2 billion per year to municipalities across Canada to be used for various infrastructure projects<sup>36</sup>; this means about \$746 million per year to Ontario.<sup>37</sup> It is allocated among Ontario municipalities on a per capita basis.<sup>38</sup>



The Ontario gas-tax program provides two cents per litre of gas-tax revenues to municipalities, aimed at transit improvements. This amounted to \$316 million in gas tax revenues in 2009,<sup>39</sup> of which about \$11 million is available to Hamilton.<sup>40</sup> Ontario's fuel-tax sharing program is based on a funding formula ratio of 70 per cent ridership and 30 per cent population.<sup>41</sup>

One or both of these fuel-tax sharing programs could be expanded to provide Hamilton with more revenues to support needed expenditures, such as transit (see Transit Investments below). Such a change would require a concerted effort in negotiations among municipalities and the provincial government, likely along with municipal political support for higher fuel taxes.

Increases in fuel-revenue sharing could be structured differently. Relying solely on population benefits fast-growing municipalities at the expense of those growing at a more sustainable rate. Relying mainly on ridership gives a positive incentive for municipalities to increase ridership, but doesn't help municipalities with low ridership make investments to grow that ridership. If the tax-sharing programs were expanded, these existing formulas could be complemented with a new formula to distribute the incremental increase in a way that recognizes sustainable growth and helps grow ridership.

## **Transit investments**

Transit is essential to provide alternatives to automobile transportation. Good, dense transit networks can increase the vitality of a city core, and boost infill and brownfield development. Transit builds ribbons of higher urban density along routes with frequent stops and nodes of higher density at major stations. Thus transit can help reduce demand for sprawling greenfield development.

On the other hand, providing transit service to the edges of a city or beyond makes moving to the edge more attractive, thus exacerbating sprawl and automobile dependency. It also drains resources away from other parts of the system, thus making it more challenging to build a dense, urban-style network.

A core rapid-transit system can build ridership and reduce traffic in key corridors. However, it is also important to expand bus coverage, which provides essential service away from LRT arteries, and also feeds the LRT system. LRT systems and Bus Rapid Transit (BRT) systems such as that in Ottawa, can be established by creating dedicated higher-speed, bus-only and LRT-only lanes on key routes.

A transit system needs to have user characteristics that will encourage ridership. A dense network of clean, fast transit is important to attracting drivers away from their cars, as is keeping the cost low. Calgary, for instance, offers free access to its LRT system at the city centre.<sup>42</sup> Considering the enormous subsidies to automobile transportation (both financial subsidies and environmental externalities) there is a need to have healthy transit subsidies in order to provide a quality of service that will attract drivers away from their cars.

### ***The Hamilton Potential***

The City of Hamilton has committed to doubling transit ridership (to 100 rides per person per year) by 2020.<sup>43</sup> This increase will require significant investment in improved transit services. In addition, participants and speakers at the 2011 Transportation Summit emphasized that Hamilton needs the proposed LRT.

Many hope that the provincial government, through Metrolinx, will make a substantial contribution to these transit improvements. However, it seems clear that Hamilton will need to generate at least some portion of the funds needed. Doing so proactively – coming to the table with money – could give Hamilton an advantage in the competition for funding.

A boost in fuel-tax rates and revenue sharing would help (see Fuel Taxes, above). However, such negotiations are not sure to provide results and any gains are subject to the risk of cancellation by the contributing government. Fortunately there are alternatives. Many EPR instruments, including those discussed in this paper, also generate revenue streams that could help finance investments in transit.

### **Parking pricing**

Across most cities, some parking spaces have a price charged and some are provided free of charge to users. However, whether there is a charge or not, there is a real cost to parking.<sup>44</sup>

Parking cars on roads or on other land means that someone has to pay for the creation of the space, its maintenance, repair, etc. When a ‘free’ or under-priced parking space is owned by the public, local citizens and businesses pay for that subsidy through higher property taxes. Those who don’t use the parking spaces are forced to subsidize those who do. And, of course, those from out of town don’t pay their share for using such parking spaces; city taxpayers subsidize out-of-town users.

Likewise, when a free or under-priced parking space is provided privately, the cost is picked up elsewhere. Customers pay through higher prices on goods and services, employees through suppressed wages, and businesses through higher rent or property-ownership costs.

Stores, shopping malls, business parks, industrial parks and other facilities that offer free parking encourage motoring, thereby imposing costs on the transportation system and on the public purse. There is also an opportunity cost of parking space – the cost of space not being used for other purposes, such as residential, business or transportation uses.

The point is that we do pay the *full* costs of free or under-priced parking. There is no question about the true cost of parking; parking is never free. The real question is *how* we pay for it.

Instead of paying through property taxes, higher prices or lower wages, we could simply pay when we use the parking. This doesn't increase the costs of parking; it just *reallocates* it. The reallocation is fairer; instead of someone else paying for the parking, the user pays.

This also creates an incentive to use less parking, and to use transit and active transportation (biking and walking). Because less parking will be used, some of the land can be freed up for other purposes. Thus the overall costs of parking will actually be reduced.

*“[M]unicipalities – through their control of parking meters and public parking lots – could raise revenues from parking. This would achieve some of the same effects (i.e. a substitution away from private automobiles) as road tolls on highways. Pushing up the cost of road use well above that of public transit would also ease the pressure on cash-strapped cities to subsidize this latter form of transportation.”*

TD Bank<sup>45</sup>

There are many ways to implement parking pricing. Some of the most familiar are by installing parking meters or kiosks on streets or in parking lots, or by requiring permits for parking on certain streets. However, parking pricing can also be implemented by a range of high-tech, low-cost automated systems.

### ***The Hamilton Potential***

Given Hamilton’s struggling core, raising parking prices downtown is a non-starter – it would be going in precisely the wrong direction. Boosting parking prices in any city’s core can undermine its vitality and the economic boost that downtowns provide to other parts of a city.

It would be far preferable to institute parking pricing in suburban malls and employment centres. Pricing of large parking spaces city-wide across Hamilton would help to level the playing field between downtown and the suburbs.<sup>46</sup> This would also provide a needed stream of revenue for the City of Hamilton to invest in transit and other priorities.

The parking-tax rate could be reduced for parking lots that are underground, or in parkades above commercial uses. This would encourage more efficient land development and give a break to downtown parking lots.

## **Development Cost Charge Adjustments**

Development cost charges are fees levied on new developments to help fund the costs that those developments impose on a city. These costs (e.g. costs of roads and utilities) can vary significantly depending on the location of the development and the distance to the nearest point of connection to existing infrastructure. Typically, development within a built-up, serviced area will cost the city less than development on a greenfield site where no services previously existed.

### Development location options

**Greenfield development:** Encroaching on agricultural, natural or recreational land.

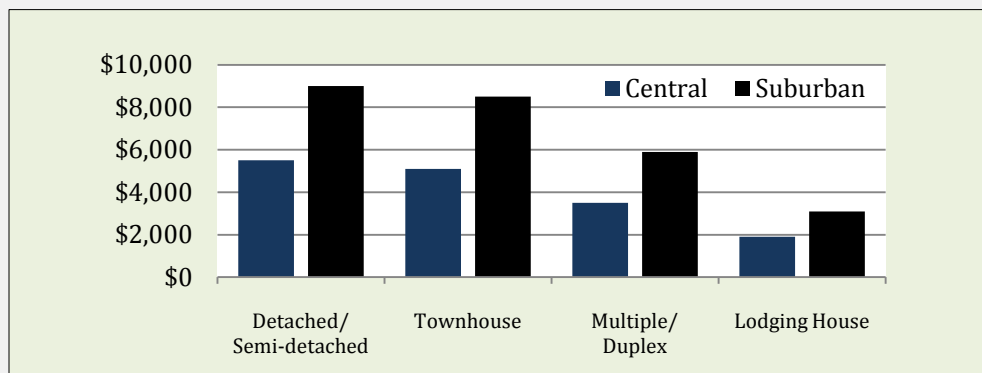
**Brownfield development:** Recycling lands that were formerly industrial or commercial and that required cleanup.

**Greyfield development:** Recycling lands that formerly had large, impermeable surfaces, e.g. under-used parking lots or shopping malls.

Some cities charge flat rates based on number of residential units or square footage, irrespective of location or costs of servicing. Clearly this does not reflect the financial costs that the city faces, let alone the environmental costs of sprawl noted earlier. Cities can re-structure DCC rates to reward denser development, re-development of brownfield and greyfield sites, and development closer to built-up areas and transit.

### Kitchener's Development Cost Charges

The City of Kitchener has set lower DCCs for denser development, and for development in central neighbourhoods as compared to suburban neighbourhoods. Compared to central charges, suburban charges are 66 per cent higher across all building types. This provides an incentive to build more densely and in the central part of town.



Data: City of Kitchener. Figure: Thompson and Bevan, "Smart Budget".<sup>47</sup>

### The Hamilton Potential

Hamilton already has DCCs that offer some positive incentives.<sup>48</sup> For instance, all development in the core downtown area has a zero rate and brownfield developments are eligible for credits. Also, residential charges are generally lower for denser types of developments (multiple family) than for single detached.

However, there is room for improvement. For instance, the rates could be further adjusted to offer an incentive to build closer to areas well serviced by transit, or to build in denser parts of the city, as compared to low-density areas, e.g. near the Main-King corridor and HSR B-Line, or John-James-Upper James corridor and A-Line.

## Property Tax Adjustments

Residential property taxes are usually based on market values. Because land at the edges is cheap compared to central land, this results in lower property taxes in the suburbs and another incentive for sprawl.

Adjusting property tax rates – increasing taxes in far-flung areas and reducing them in the city centre – helps encourage re-development of brownfield and greyfield sites, revitalize underused central areas, and reduce sprawl.

Similarly, adding a density-based component to property taxes – raising the rates for low-density developments and reducing them for high-density developments – can encourage greater density in new developments.

### *The Hamilton Potential*

Currently, Hamilton’s tax rates are highest in Hamilton proper and lower in the smaller communities.<sup>49</sup> Levelling the playing field, or even reversing the current pattern, would help concentrate development and reduce sprawl and incursions on small communities and rural areas.

Hamilton’s property-tax rate structure also provides a financial incentive for residents and businesses to locate in areas that are not served by transit (see figure below). This is further exacerbated by Hamilton’s transit levy, which boost tax rates even further in areas with relatively good transit service.<sup>50</sup> This same pattern – higher tax rates for being near transit – carries over to all classes of property (industry, commercial, etc.).

**Hamilton Residential Property Tax Rates**

Hamilton	
With Transit	No Transit
1.538147%	1.452408%

Source: City of Hamilton<sup>51</sup>

This is an example of what economists term a “perverse incentive” – an incentive that runs contrary to public policy goals (in this case, those articulated in Hamilton’s Transportation Master Plan).<sup>52</sup> Reversing the transit-related rate differentials would provide incentives to develop in areas served by transit.

Of course, every city has a history and there is a political explanation for why things are the way they are. However, it is also important for Hamilton to consider the future and the incentives that tax structures create. Right now, Hamilton’s property-tax structure encourages residents (and commercial, industrial and other users) to locate in rural areas and smaller communities without transit service, or with poor transit service. This will boost industrial and new residential encroachment on these areas, while at the same time reducing use of Hamilton’s transit system and thus fare-box revenues, creating a further drain on public resources. This could all be reversed, protecting smaller communities and rural areas from encroachment and increasing the transit ridership base.

## Regional and Provincial Cooperation

Implementing some EPR tools will require amendments to provincial legislation to provide the necessary legal powers to the City. However, some will not require legislative changes. Also, where one specific instrument cannot be used (e.g. a specific tax), it is sometimes possible to use another type of instrument that addresses the same issue (e.g. a user fee or subsidy). Certainly, the City can band together with other cities that wish to expand their capacities and work with the Association of Municipalities of Ontario or the Federation of Canadian Municipalities to approach the provincial government.

For some EPR tools – though not all – the City may need to overcome the threat of policy competition: the possibility that other municipalities will attempt to undercut Hamilton in order to draw business or residents away from it. Policy competition is usually an unrealized threat; municipalities generally prefer to maintain positive relationships with their neighbours and know that retaliation is always a possibility. Hence they restrain themselves from unwise competition. Also, Hamilton is fortunate in being a unified region-wide government; cities elsewhere are at greater risk of policy competition from neighbours with rural areas that are much closer to built-up city areas. Where municipalities are tempted into beggar-thy-neighbour policies and are not deterred by the possibility of retaliation, the City has other options, including banding together with municipalities with similar aims or working with the province (possibly with the help of the Association of Municipalities of Ontario) to establish provincial limits to policy competition.

Delineating the changes that are within the current capacity of the City and those that require provincial or regional co-operation is fairly straightforward, though beyond the scope of this paper. However, some EPR changes – whether in the area of transportation or sprawl – are within the City's capacity; the city can begin to move forward in some areas, and to make strong and concerted efforts to achieve needed cooperation in the others.

## Conclusions

Environmental pricing reform tools can help Hamilton achieve a number of its transportation and land use goals, leading to an improved quality of life for residents. It can also help diversify Hamilton's revenue streams and improve its fiscal position.

This short discussion paper has provided a quick outline of some of the opportunities. Further research would be very useful. Hamilton has already identified its goals; what is needed now is more detailed consideration of the various policy instruments that could be used to attain those goals.

Encouragingly, there seems to be an appetite for change and innovation in Hamilton. Speakers and participants at the 2011 Transportation Summit identified the need to think big and to start taking action.

Indeed, despite the need for more research, Hamilton can start taking action in some areas. A prime area for near-term action would be eliminating perverse incentives or even reversing them. For example, the existing property tax structure could be changed in order to provide a financial incentive to locate households and businesses near central areas and good transit service. DCCs could be adjusted to provide similar incentives for new developments. Hamilton could also begin to explore options for levelling the playing field on parking costs across the city. These types of changes can be studied and undertaken within one or, at most, two budget cycles.

Another area in which Hamilton can start taking action is the development of partnerships and a strategy to encourage the provincial government to provide it the powers needed to implement additional EPR measures.

Hamilton's 2011 Transportation Summit on EPR represents a significant milestone in thinking about the options and the opportunities. Hamilton is thinking big. Now is the time for action.

## Endnotes

- 1 David Thompson is Director of Sustainable Communities for Sustainable Prosperity, and Principal of PolicyLink Research and Consulting. His municipal-focused publications include: *Putting Transportation on Track in the GTHA: A Survey of Road and Rail Emissions Comparisons*; *Smart Budget: A Background Paper on Environmental Pricing Reform for Local Governments*; and *The Smart Budget Toolkit*. He has prepared reports and delivered presentations on green economy, green jobs, and environmental pricing reform for a number of organizations, including the City of Edmonton, the Federation of Canadian Municipalities and the Toronto City Summit Alliance. He has worked as a lawyer in government and in the civil society sector, in management, and as a small business owner. He has postgraduate degrees in law and environmental economics. He is a native of Hamilton, currently based in Edmonton.
- 2 See <http://www.sustainableprosperity.ca>, and especially those in the Market Tools for Sustainable Communities section: <http://www.sustainableprosperity.ca/market-tools-sustainable-communities>.
- 3 City of Hamilton – Public Works, Transportation Master Plan [http://www.hamilton.ca/CityDepartments/PublicWorks/Environment\\_Sustainable\\_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm](http://www.hamilton.ca/CityDepartments/PublicWorks/Environment_Sustainable_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm).
- 4 City of Hamilton – Public Works, "Transportation Summit 2011" [http://www.hamilton.ca/CityDepartments/PublicWorks/Environment\\_Sustainable\\_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/Transportation+Summit+2011.htm](http://www.hamilton.ca/CityDepartments/PublicWorks/Environment_Sustainable_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/Transportation+Summit+2011.htm).
- 5 City of Hamilton, "Hamilton Transportation Master Plan" (May 2007) p.22 [http://www.hamilton.ca/CityDepartments/PublicWorks/Environment\\_Sustainable\\_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm](http://www.hamilton.ca/CityDepartments/PublicWorks/Environment_Sustainable_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm).
- 6 Hamilton Economic Development, "One Billion: Hamilton Economic Development 2010 Economic Review" [http://www.investinhamilton.ca/images/stories/publications/2010\\_annual\\_review\\_final.pdf](http://www.investinhamilton.ca/images/stories/publications/2010_annual_review_final.pdf).
- 7 Remarks of Mayor Bob Bratina at Hamilton Transportation Summit 2011: Environmental Pricing Reform.
- 8 This discussion and other elements of this paper borrow from the "Smart Budget Toolkit: Environmental Pricing Reform for Municipalities" (Sustainable Prosperity, University of Ottawa, May 2010) <http://www.sustainableprosperity.ca/files/Smart%20Budget%20Toolkit.pdf>; S. Thompson and A. Bevan, "Smart Budget: A Background Paper on Environmental Pricing Reform for Local Governments" (Sustainable Prosperity, University of Ottawa, January 2010) [http://www.sustainableprosperity.ca/files/Smart\\_Budget.pdf](http://www.sustainableprosperity.ca/files/Smart_Budget.pdf); and, D. Thompson, "The Power of Prices and the Failure of Markets: Addressing Edmonton's Environmental and Fiscal Challenges (City of Edmonton, May 2010) [http://www.edmonton.ca/city\\_government/documents/Discussion\\_Paper\\_17\\_Power\\_of\\_Prices\\_and\\_Failure\\_of\\_Markets.pdf](http://www.edmonton.ca/city_government/documents/Discussion_Paper_17_Power_of_Prices_and_Failure_of_Markets.pdf).
- 9 Thneeds: In the children's book *The Lorax*, the Once-ler character builds an enormous factory to produce thneeds. This damages the environment, undermining the economic foundations of the business, which collapses. Dr. Seuss, *The Lorax* (Random House: Toronto 1971).
- 10 For further discussion of these and other areas where EPR can be used, see publications at the Sustainable Prosperity website, Market Tools for Sustainable Communities section: <http://www.sustainableprosperity.ca/market-tools-sustainable-communities>.
- 11 Environment Canada, "2008 Municipal Water Pricing Report" [http://www.ec.gc.ca/WATER/en/manage/data/e\\_MUP2008.htm](http://www.ec.gc.ca/WATER/en/manage/data/e_MUP2008.htm).
- 12 City of Barrie, "2007 Residential Water and Sewer Rates" <http://www.barrie.ca/Content.cfm?C=4530&SC=1&SCM=0&MI=598&L1M=4>.



- 13 Ipsos Reid, "City of Calgary 2010 Citizen Satisfaction Survey" (Oct 2010)  
[http://www.calgary.ca/docgallery/bu/customerservice/2010\\_citizen\\_satisfaction\\_survey.pdf](http://www.calgary.ca/docgallery/bu/customerservice/2010_citizen_satisfaction_survey.pdf).
- 14 D. Thompson, "No Free Lunch: Financing the Priorities of Calgarians" (Parkland Institute, University of Alberta, June 2010) pp.6-7,  
<http://parklandinstitute.ca/downloads/reports/NoFreeLunch-web.pdf>.
- 15 E.g. City of Kitchener, "2009 Citizen Survey" (Jan 2010) p. 22  
<http://www.kitchener.ca/en/insidacityhall/resources/EnvironicsSurveyResults2009.pdf>; City of Edmonton "2010 Tax Bill at a Glance," p. 10,  
[http://www.edmonton.ca/city\\_government/documents/2010\\_proposed\\_budget\\_budget\\_at\\_a\\_glance.pdf](http://www.edmonton.ca/city_government/documents/2010_proposed_budget_budget_at_a_glance.pdf); CBC News, "Winnipeg property tax hike favoured" (Oct 20, 2010)  
<http://www.cbc.ca/news/canada/manitoba/story/2010/10/19/man-poll-property-taxes-leger.html>.
- 16 Nanos Research, "The Hamilton Spectator/Nanos Poll" (October 2010)  
<http://www.nanosresearch.com/library/polls/POLNAT-W10-T440.pdf>.
- 17 City of Hamilton, "2009 Financial Report" (p.1-1)  
[http://www.hamilton.ca/NR/rdonlyres/5D8DCD38-518C-4F51-83FC-06AFD2A83967/0/2009FinancialReport\\_rev8202010.pdf](http://www.hamilton.ca/NR/rdonlyres/5D8DCD38-518C-4F51-83FC-06AFD2A83967/0/2009FinancialReport_rev8202010.pdf).
- 18 Federation of Canadian Municipalities, "Building Prosperity from the Ground Up: Restoring Municipal Fiscal Balance" (2006)  
[http://www.canadascities.ca/pdf/2006\\_FCM\\_Building\\_Prosperty\\_from\\_the\\_Ground\\_Up.pdf](http://www.canadascities.ca/pdf/2006_FCM_Building_Prosperty_from_the_Ground_Up.pdf).
- 19 Ipsos Reid, "City of Calgary 2010 Citizen Satisfaction Survey" (Oct 2010)  
[http://www.calgary.ca/docgallery/bu/customerservice/2010\\_citizen\\_satisfaction\\_survey.pdf](http://www.calgary.ca/docgallery/bu/customerservice/2010_citizen_satisfaction_survey.pdf).
- 20 CBC News, "Ontario's smog causes 9,500 deaths per year, medical association says" (June 6, 2008)  
<http://www.cbc.ca/health/story/2008/06/06/smog-deaths.html>.
- 21 Nearly 4,900 Ontarians are killed by infectious disease per year: J. Kwong, N. Crowcroft, M. Campitelli, S. Ratnasingham, N. Daneman, S. Deeks and D. Manuel, "Ontario Burden of Infectious Disease Study (Institute for Clinical Evaluative Sciences and Ontario Agency for Health Protection and Promotion, December 2010) p.5. [http://www.ices.on.ca/file/ONBOIDS\\_FullReport\\_intra.pdf](http://www.ices.on.ca/file/ONBOIDS_FullReport_intra.pdf).
- 22 440 out of a total of 1,700 from air pollution: M. Campbell, K. Bassil, C. Morgan, M/Lalani, R. Macfarlane, and M. Bienfeld, "Air Pollution Burden of Illness from Traffic in Toronto – Problems and Solutions" (Nov 2007, Toronto Public Health).  
[http://www.toronto.ca/health/hphe/pdf/air\\_pollution\\_burden.pdf](http://www.toronto.ca/health/hphe/pdf/air_pollution_burden.pdf).
- 23 D. Corr, "Health-Impacting Air Pollutants: A Mobile Monitoring Study to Identify and Rank Sources in Hamilton, Ontario Phases 2/3" (Clean Air Hamilton, City of Hamilton, Ministry of the Environment and Environment Canada, 2008) p.34  
<http://www.cleanair.hamilton.ca/downloads/HIAPmobileMonitoring2008.pdf>.
- 24 K. Vodden, D. Smith, F. Eaton, D. Mayhew, "Analysis and Estimation of the Social Cost of Motor Vehicle Collisions in Ontario" (Transport Canada, August 2007) p.ii  
<http://www.tc.gc.ca/roadsafety/tp/tp14800/pdf/TP14800E.pdf>.
- 25 Assumes a population of metropolitan Hamilton of approximately 700,000 people, and per capita vehicle use and ownership levels the same as Canada.
- 26 Transport Canada, "Estimates of the Full Cost of Transportation in Canada" (Transport Canada, Aug. 2008) p.13 <http://www.tc.gc.ca/pol/en/Report/FullCostInvestigation/Synthesis/report-final.pdf> accessed December 4, 2008.
- 27 For more on sprawl and EPR, from which some material in this section is drawn, see: D. Thompson, "The Power of Prices and the Failure of Markets: Addressing Edmonton's Environmental and Fiscal Challenges" (City of Edmonton, June 2010).  
[http://www.edmonton.ca/city\\_government/documents/Discussion\\_Paper\\_17\\_Power\\_of\\_Prices\\_and\\_Failure\\_of\\_Markets.pdf](http://www.edmonton.ca/city_government/documents/Discussion_Paper_17_Power_of_Prices_and_Failure_of_Markets.pdf).
- 28 And suburban homeowners certainly don't want sprawl to continue; those quiet new home locations overlooking scenic farmland and forests are soon are engulfed by other sprawling subdivisions.

- 29 For more on the costs of sprawl, see: R. Burchell et al, "Costs of Sprawl – 2000" (Transportation Research Board, National Research Council)  
[http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_rpt\\_74-a.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_74-a.pdf).
- 30 Birol comments reported in M. Prystupa, "Record gas prices blamed on peak oil" (CBC News, March 28, 2011) <http://www.cbc.ca/news/canada/manitoba/story/2011/03/28/mb-peak-oil-gas-prices-winnipeg.html>.
- 31 City of Hamilton, "Hamilton Transportation Master Plan" (May 2007) p. 10  
[http://www.hamilton.ca/CityDepartments/PublicWorks/Environment\\_Sustainable\\_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm](http://www.hamilton.ca/CityDepartments/PublicWorks/Environment_Sustainable_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm)
- 32 Vander Ploegg "Delivering the Goods: Infrastructure and Alternative Revenue Sources for the City of Edmonton" (Canada West Foundation, June 2008) p.31  
[http://www.cwf.ca/V2/files/Delivering\\_goods.pdf](http://www.cwf.ca/V2/files/Delivering_goods.pdf). See also D. Maddison, D. Pearce et al., *Blueprint 5: The True Cost of Road Transport* (Earthscan, London, UK, 1996) at p. 194; Victoria Transport Policy Institute, "Transportation Cost and Benefit Analysis II – Roadway Costs, s. 5.6 Roadway Facility Costs" <http://www.vtpi.org/tca/tca0506.pdf>; Subsidy Scope, "Analysis Finds Shifting Trends in Highway Funding: User Fees Make Up Decreasing Share" (Nov. 25, 2009) <http://subsidyscope.org/transportation/highways/funding/>.
- 33 See also D. Brown, G. Hoover, A. Howatson, J. Schulman, "Canada's Transportation Infrastructure Challenge: Strengthening the Foundations - Distance Based Pricing" (Conference Board of Canada, January 2005) p. 15 <http://www.conferenceboard.ca/e-library/abstract.aspx?did=1137&goal1=PRICE0>.
- 34 Figure: Organization for Economic Cooperation and Development, "Comparisons of developments in tax rates over time" <http://www2.oecd.org/econst/queries/TaxRateInfo.htm>.
- 35 Thompson and Bevan, "Smart Budget" op.cit. p.31.
- 36 Government of Canada, Gas Tax Fund <http://www.buildingcanada-chantierscanada.gc.ca/funprog-progfin/base/gtf-fte/gtf-fte-eng.html>.
- 37 Infrastructure Canada, "Gas Tax Fund Allocation to the Provinces, Territories and First Nations of \$5 Billion (2005-2010)" <http://www.inf.gc.ca/ip-pi/gtf-fte/gtf-fte-table-eng.html>.
- 38 Infrastructure Canada, "Canada-Ontario - Association of Municipalities of Ontario - City of Toronto" section 2(c) <http://www.inf.gc.ca/ip-pi/gtf-fte/agree-entente/agree-entente-on-eng.html>. See also Association of Municipalities of Ontario, "Federal Gas Tax Funds" <http://www.amo.on.ca/Content/NavigationMenu/SustainableMunicipalities/FederalGasTax/default.htm>.
- 39 Government of Ontario, "Gas tax fuels better public transit" (April 30, 2010)  
<http://news.ontario.ca/mto/en/2010/04/gas-tax-fuels-better-public-transit-1.html>.
- 40 City of Hamilton, "City of Hamilton/Ministry of Transportation Dedicated Gas Tax Funding Agreement (FCS09057) (City Wide)" (April 30, 2009)  
<http://www.hamilton.ca/NR/rdonlyres/1F09DE05-24B9-49AD-AA1B-CF92D7EA3A62/0/May11FCS09057200809DedicatedGasTaxAgreement.pdf>.
- 41 Government of Ontario, "Ontario Shares Gas Tax Dollars With Municipal Transit" (March 6, 2009)  
<http://news.ontario.ca/mto/en/2009/03/ontario-shares-gas-tax-dollars-with-municipal-transit.html>.
- 42 Calgary Transit, "Calgary's Light Rail Transit Line"  
[http://www.calgarytransit.com/route\\_maps/lrt\\_stop.html](http://www.calgarytransit.com/route_maps/lrt_stop.html).
- 43 City of Hamilton, "Hamilton Transportation Master Plan" (May 2007)  
[http://www.hamilton.ca/CityDepartments/PublicWorks/Environment\\_Sustainable\\_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm](http://www.hamilton.ca/CityDepartments/PublicWorks/Environment_Sustainable_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm).
- 44 D. Shoup, *The High Cost of Free Parking*, Chicago: Planners Press, 2005. D. Shoup, "The High Cost of Free Parking" reprinted from *Journal of Planning, Education and Research* vol.17 pp.3-20; University of California Transportation Centre, UCTC No. 351

- <http://www.uctc.net/papers/351.pdf>.
- 45 D. Drummond, D. Burleton, G. Manning and K. Richardson, "The Greater Toronto Area (GTA): Canada's Primary Economic Locomotive in Need of Repairs"" (TD Bank Economics, May 22, 2002) p.26 [http://www.td.com/economics/special/db0502\\_gta.pdf](http://www.td.com/economics/special/db0502_gta.pdf).
- 46 E.g., The Ontario government has given Toronto the power to levy such charges: H. Kitchen, "Financing Public Transit and Transportation in the Greater Toronto Area and Hamilton: Future Initiatives" (Residential and Civil Construction Alliance of Ontario, January 2008) p.35 <http://www.rccao.com/news/files/RCCAOFinancingPublicTransitReport01-2008LR.pdf>.
- 47 Thompson and Bevan, "Smart Budget" Op.cit.
- 48 See City of Hamilton, "Development Charge Information - Rates Effective July 6, 2010 - July 5, 2011" [http://www.hamilton.ca/NR/rdonlyres/3486E616-F5B2-42CE-9B1A-73B7D3737228/0/DCPamphletonwebsiteJuly2010toJuly2011\\_fin.pdf](http://www.hamilton.ca/NR/rdonlyres/3486E616-F5B2-42CE-9B1A-73B7D3737228/0/DCPamphletonwebsiteJuly2010toJuly2011_fin.pdf).
- 49 City of Hamilton, "2010 Final Tax Rates – Full, As at June, 2010" [http://www.hamilton.ca/NR/rdonlyres/78C7AAC7-E2F4-4BA7-B468-B6E5F7240DAC/0/040\\_2010\\_Tax\\_Rates\\_Full\\_City\\_of\\_Hamilton\\_2010\\_06\\_10.pdf](http://www.hamilton.ca/NR/rdonlyres/78C7AAC7-E2F4-4BA7-B468-B6E5F7240DAC/0/040_2010_Tax_Rates_Full_City_of_Hamilton_2010_06_10.pdf).
- 50 City of Hamilton, "2010 Residential general and area-specific rates by community" [http://www.hamilton.ca/NR/rdonlyres/A6B1D73D-63D9-4A82-BBAA-FDFBECDF9D7C/0/038\\_2010\\_Residential\\_general\\_and\\_area\\_specific\\_rates\\_by\\_community.pdf](http://www.hamilton.ca/NR/rdonlyres/A6B1D73D-63D9-4A82-BBAA-FDFBECDF9D7C/0/038_2010_Residential_general_and_area_specific_rates_by_community.pdf).
- 51 City of Hamilton, "2010 Final Tax Rates – Full, As at June, 2010" [http://www.hamilton.ca/NR/rdonlyres/78C7AAC7-E2F4-4BA7-B468-B6E5F7240DAC/0/040\\_2010\\_Tax\\_Rates\\_Full\\_City\\_of\\_Hamilton\\_2010\\_06\\_10.pdf](http://www.hamilton.ca/NR/rdonlyres/78C7AAC7-E2F4-4BA7-B468-B6E5F7240DAC/0/040_2010_Tax_Rates_Full_City_of_Hamilton_2010_06_10.pdf).
- 52 See, for example, Objective 4 in City of Hamilton, "Hamilton Transportation Master Plan" (May 2007) p.11 [http://www.hamilton.ca/CityDepartments/PublicWorks/Environment\\_Sustainable\\_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm](http://www.hamilton.ca/CityDepartments/PublicWorks/Environment_Sustainable_Infrastructure/StrategicPlanning/StrategicEnvironmentalPlanningProjects/GRIDS/Transportation+Master+Plan.htm).