

» Innovative Infrastructure Financing Mechanisms for Smart Growth

By
Ray Tomalty, PhD
Co-Operative Research and
Policy Services (CORPS)



in association with
Daniel Casey, Marty Collier, Van Ferrier
Alanah Heffez, Bartek Komorowski and Joel Thibert

For
SmartGrowthBC



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The views expressed herein do not necessarily represent the views of the Government of Canada.

About the Author

Dr. Ray Tomalty is principal of Co-Operative Research and Policy Services (CORPS), a consulting firm in Montreal, and an adjunct professor at McGill University. He specializes in research on regional planning and sustainable communities, including associated topics such as housing intensification, sustainable transportation, growth management, the use of municipal fiscal instruments such as taxation and development charges to achieve sustainability goals, and the use of indicators as a means of measuring community sustainability. He carried out a research program at Queen's University, exploring the use of municipal financial instruments to influence urban form in Ontario. Subsequently, he conducted a national research study on behalf of CMHC that examined how development charges could be used to link fiscal and planning goals. Dr. Tomalty has also been the primary researcher and author of a number of guidebooks and case study round-ups designed to assist sustainable development at the municipal level.

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Summary

>> This report looks at the potential for infrastructure financing mechanisms to contribute to smart growth.



The financing mechanisms we examined may help accomplish this in several ways: by raising funds for infrastructure (e.g., transit) that supports smart growth, by influencing the location or type of growth proposed by developers, or by influencing the location and travel decisions of residents and commuters. Each of the mechanisms has its advantages and disadvantages, success factors and barriers to success and may be applicable in specific circumstances. The report examines all of these issues in the context of specific case studies and draws some more general conclusions as to which mechanisms appear to have the most promise in Canada.

There is a wide variety of financing tools that raise funds for municipal or regional infrastructure while promoting smart growth. The report briefly describes 15 tools currently in use in the US or Canada. A summary of each tool provides an overview of the mechanism, indicates what kind of infrastructure it can be applied to, describes the potential smart growth outcomes, lists the advantages and disadvantages, identifies cities where the tool is being used, and provides an information source.

The report includes case studies of each of these mechanisms in action in Canada and the US. Each case study presents information on how the mechanism was used to fund infrastructure and achieve smart growth outcomes in a specific jurisdiction and offers a brief assessment of the success of the initiative, the barriers encountered and the issues that may be raised by transferring the mechanism to (other) jurisdictions in Canada. Of the case studies presented here, ten are based on longer, more detailed studies that appear in the Appendix. The full case studies provide greater detail in terms of the background conditions, context, and

motivation for implementing the funding mechanism and give specifics on the financial aspects and outcomes, along with an assessment of the mechanism from the point of view of various stakeholders.

The mechanisms and the jurisdictions covered are:

- High Occupancy/Toll Lanes (San Diego)
- Sector and Density Gradient Approach to Development Cost Charges (Kelowna)
- Parking Site Tax (Vancouver)
- Land Value Taxation (Harrisburg)
- Standard Offer Contract (Toronto)
- Storm Water Utility Fee Credits (Minneapolis)
- TOD Policy Leveraging (San Francisco)
- Fuel Tax Transfer (Edmonton)
- Tax Increment Financing (Portland)
- Tax Base Sharing (Minneapolis)
- Vehicle Registration Surcharges (Montreal)
- Commuter Tax (Philadelphia)
- Tax-Exempt Tax Revenue Bonds (Denver)
- Local Option Sales Tax (Denver)
- Grant Anticipation Revenue Vehicles (New Jersey)

The conclusion section offers some observations on the potential of the 15 tools surveyed to raise money for infrastructure, achieve smart growth outcomes, and be replicated across Canada. Some of the key observations include:

- The tools with the highest potential for raising money for infrastructure are those that provide stable and predictable revenues that are exclusively dedicated to paying for infrastructure. The Alberta

Summary continued...

fuel tax transfer program, the Ontario standard offer contract (SOC) and the density gradient and sectoral DCCs used in Kelowna best fit this description.

- The 15 financing tools reviewed in this study fall into two general categories: tools that inherently encourage smart growth by virtue of how revenue is raised and those that encourage smart growth by virtue of the way in which the revenue raised is spent. In the former case, the application of the financing tool itself, and not merely the infrastructure it funds, has the potential to yield smart growth outcomes. Some tools have the potential to work in both ways, i.e., inherently and through spending decisions.
- Tools that inherently drive smart growth do so in three broad ways: (1) by linking charges to the use of infrastructure; (2) by diminishing the fiscal disparities between different parts of an urban region; (3) by taxing inefficient land uses. For the second group of mechanisms, smart growth outcomes depend entirely on how revenues raised by the mechanism are spent. In these cases, coordination between infrastructure investment and land use planning is of key importance.
- By linking charge levels to infrastructure use, financing mechanisms can encourage more efficient land use and infrastructure investment decisions. Sector and gradient based development cost charges (DCCs), storm water utility fees, and fuel taxes have the greatest potential to promote smart growth in this way.
- The two mechanisms that serve to mitigate inter-municipal fiscal disparities, tax-base sharing and the commuter tax, are also inherent promoters of smart growth.
- Two of the examined tools, land value taxation (LVT) and parking site tax (ST), both have the inherent potential to encourage smart growth by taxing inefficient land uses.
- For the second group of mechanisms, smart growth outcomes depend entirely on how revenues raised by the mechanism are spent. This includes parking site taxes, high occupancy toll (HOT) lanes, fuel tax transfer, tax increment financing, grant anticipation revenue vehicles, and vehicle registration surcharges. In the absence of coordination between infrastructure investment and land-use planning, the use of these tools would be of little use in attaining the goals of smart growth.
- Among the tools reviewed in this report, there are two types that should prove to be readily transferable to many jurisdictions in Canada with a minimum of difficulty: density and sectoral based development cost charges (DCCs) and tools based on the property tax, including land value taxation (LVT) and tax increment financing (TIF).
- Green infrastructure-promoting tools, such as standard offer contracts (SOCs) and stormwater fees and credits, should be readily transferable, although they may require a significant administrative effort.
- Lending mechanisms such Certificate of Participation (COPs) and transit tax-revenue bonds will require legislative changes in order to be transferable to jurisdictions in Canada.
- Some of the tools used in the US, particularly those related to new forms of municipal taxation, while potentially useful for Canadian cities, could be difficult to transfer.

Table of Contents

Acknowledgements
About the Author
Summary



1	Introduction.....	1	3	Case Study Summaries of Financing Mechanisms	21
1.1	Background and Study Purpose	1	3.1	San Diego: High Occupancy/ Toll Lanes	22
1.2	Scope of the Report	3	3.2	Kelowna: Sector and Density Gradient Approach to Development Charges	23
1.3	Methodology.....	4	3.3	Vancouver: Parking Site Tax	25
1.4	Outline of the Report	5	3.4	Harrisburg: Land Value Taxation...	27
1.5	Sources.....	5	3.5	Toronto: Standard Offer Contract.....	28
2	Overview of Infrastructure Financing Mechanisms that Promote Smart Growth	7	3.6	Minneapolis: Stormwater Utility Fee Credits.....	30
2.1	High Occupancy/Toll Lanes	7	3.7	San Francisco: TOD Policy Leveraging.....	31
2.2	Sector and Density Gradient Approach to Development Cost Charges.....	8	3.8	Edmonton: Fuel Tax Transfer.....	33
2.3	Parking Site Tax.....	9	3.9	Portland: Tax Increment Financing	34
2.4	Land Value Taxation	10	3.10	Minneapolis-St. Paul: Tax Base Sharing	37
2.5	Standard Offer Contract.....	11	3.11	Montreal: Vehicle Registration Surcharge.....	39
2.6	Stormwater Utility Fee Credits.....	12	3.12	Philadelphia: Commuter Tax	41
2.7	TOD Policy Leveraging.....	13	3.13	Denver: Local Option Sales Tax & Tax-exempt Tax Revenue Bonds....	42
2.8	Fuel Tax Transfer	13	3.14	New Jersey: Grant Anticipation Revenue Vehicles (GARVEE)	44
2.9	Tax Increment Financing.....	14	4	Conclusions.....	47
2.10	Tax Base Sharing	15	4.1	Infrastructure Financing Potential	47
2.11	Vehicle Registration Surcharges....	16	4.2	Smart Growth Potential.....	48
2.12	Commuter Tax	17	4.3	Transfer to Other Jurisdictions	50
2.13	Tax-Exempt Tax Revenue Bonds....	17			
2.14	Local Option Sales Tax	18			
2.15	Grant Anticipation Revenue Vehicles.....	19			

Appendix: Detailed Case Studies

1. Introduction

1.1 Background and Study Purpose

This study is meant to help address two key issues/challenges facing Canadian municipalities today: the challenge of financing urban infrastructure and the problem of urban sprawl. Towns and cities across Canada are facing a serious infrastructure deficit and struggling to find new ways to finance the needed expansions, upgrades, and repairs. The Federation of Canadian Municipalities estimates that the infrastructure deficit of Canadian municipalities has reached \$123 billion and that 79 per cent of the service life of the country's public infrastructure has been used up (Mirza, 2007). Deteriorating infrastructure entails massive loss of potable water, substandard sewage treatment, congested roads, inefficient transit systems, and other consequences with important environmental, health, social and economic dimensions. Local governments face pressures to build/update transit facilities, drinking water and sewage systems, and extend urban road networks. Federal New Deal funds are welcomed to supplement the local sources of funding, but a financing deficit is expected to continue nonetheless.

Canadian municipalities are also struggling to cope with or tame urban sprawl. Between 1971 and 1996, the urban population of Canada grew by 37%, while the amount of urbanized land grew by 77% (Statistics Canada, 2000). Much of the land being converted to urban uses is prime agricultural land, but urbanization is also an important cause of deforestation and wetland destruction. Urban sprawl has also been accused of deepening our dependency on automobiles for personal transport and contributing to serious environmental issues such as species extinction, climate change, and the depletion of limited natural resources. Sprawl affects our health by reducing opportunities for active transportation, polluting the air we breathe, and contributing to the frequency of vehicle accidents (Newman and Kenworthy, 1989).

While infrastructure financing challenges and urban sprawl are two distinct issues, they also overlap. The preponderance of the evidence suggests that urban sprawl increases the per capita costs of providing municipal infrastructure such as sewage collection, water distribution, roads, and transit increase with declining density. Sprawl also leads to the duplication of infrastructure in far-flung locations while existing infrastructure in central areas goes underutilized. When investment is drained on the city edge, there are fewer funds for maintaining and upgrading infrastructure in older areas, which reduces the quality of life in those areas and further fuels sprawl. Finally, there is much evidence that the way many cities finance infrastructure in suburban areas amounts to a significant subsidy of greenfield development by inner city areas (Gillham, 2002).

Smart growth is a relatively new movement in the US and Canada that attempts to address these two issues. For purposes of this study, smart growth means managing urban development patterns and transportation networks to minimize environmental impacts and maximize the social and economic health of the community while making prudent use of capital and operating expenditures. The smart growth movement brings together progressive planners, architects, developers, and bankers with environmentalists, housing activists, sustainable transportation advocates, and farmland preservation groups to nudge development in more sustainable ways. While the principals of smart growth vary, they include a commitment to stemming the spread of urban areas, concentrating growth in already urbanized areas, making better use of existing infrastructure, revitalizing downtowns and other centres, enhancing transit facilities, shifting the emphasis to green buildings and energy sources, and creating affordable, walkable and bikable neighbourhoods.



This report looks at the potential for infrastructure financing mechanisms to contribute to smart growth. The financing mechanisms we examine may help accomplish this in several ways: by raising funds for infrastructure (e.g., transit) that supports smart growth, by influencing the location or type of growth proposed by developers, or by influencing the location and travel decisions of residents and commuters. Each of the mechanisms has its advantages and disadvantages, success factors and barriers to success and may be applicable in specific circumstances. The report examines all of these issues in the context of specific case studies and draws some more general conclusions as to which mechanisms appear to have the most promise in Canada.

Although there have been several recent works on innovative approaches to infrastructure funding (Infrastructure Canada, 2004; Vander Ploeg, 2006), we believe this is the first time Canadian researchers have looked at infrastructure financing from a smart growth perspective. The usual framework when assessing infrastructure is to examine the economic efficiency, effectiveness, accountability, transparency, equity, and ease of administration of different financing options. While these parameters are also of interest in the present study, our perspective specifically includes the linkage between financing options and smart growth outcomes. In short, we are not only asking whether financing options are good from an economic, administrative and social point of view, but also from a planning point of view.

The link between infrastructure financing and planning is one that is often overlooked, not only in the literature on financing infrastructure, but also in professional practice. To take development cost charges as an example,¹ the research that has been done on this instrument in Canada has shown that the charges are developed and rates set with little involvement from planning professionals within the municipal organization. The result is that development charges are imposed with little concern for how they might be influencing development patterns and may be contributing significantly to problems such as urban sprawl (Tomalty and Skaburskis, 2003;

Coriolis Consulting, 2003). Finance officials, backed up by some academic literature, may question whether it is even appropriate for infrastructure financing choices to take planning outcomes into account. Financing mechanisms, some argue, are blunt instruments that are poorly suited to shape the fine grained outcomes that municipal plans are attempting to achieve (Slack, 1994).

>> The link between infrastructure financing and planning is one that is often overlooked...

The rise of the smart growth movement in the US and Canada has heightened the salience of this issue. Smart growth differs from its predecessor movements in planning (such as growth

management) in that it attempts to bring together the full range of levers, in addition to planning regulations, that might help shift development patterns from urban sprawl to more compact, diverse, walkable, and transit-oriented cities. Advocates of smart growth tend to see development patterns as the outcome of a broad range of public and private actions. Urban sprawl, in this light, is not a planning issue per se, but a reflection of much wider set of issues, including the general culture of consumption, the structure of the real estate industry, federal and state/provincial priorities, and – most importantly for our purposes – the impact of the financial mechanisms adopted by governments to fund infrastructure.

One result of the rise of the smart growth movement is the growing consensus that infrastructure financing mechanisms can be used as market-based instruments to achieve planning objectives. Planners are increasingly acknowledging the need to look at mechanisms beyond the customary command and control tools in their professional tool boxes (Cullingworth, 1997) and economists seem to be increasingly of the opinion that sprawl should be curbed if it can be accomplished through market-based approaches (Holcombe, 2004). The present report is meant to contribute in a practical way to our understanding of how this can be done.

¹ Development Cost Charges (DCCs) are fees imposed by municipalities on developers to recover the capital costs of the infrastructure required to service new development. Conventional DCCs are calculated on a per unit basis and applied uniformly across the municipality.

1.2 Scope of the Report



Municipal infrastructure is usually understood to include buildings, structures, facilities, equipment, rolling stock, land, and furnishings needed to provide municipal services. Included in this project were financing mechanisms for general revenue purposes (e.g., property taxes) that might be used to fund the full range of municipal infrastructure requirements, as well as mechanisms (e.g., fuel taxes) that could be targeted to specific infrastructure needs, such as transit, energy generation, or stormwater drainage. The report only includes financing mechanisms that involve local authorities (especially municipalities, but also local utilities) in the design of the mechanism or the collection or use of the funds raised.

Only initiatives that help finance infrastructure that promote smart growth outcomes are included in the study. Smart growth outcomes are understood to include:

- changes to community development patterns, such as focusing development in designated growth areas, revitalizing downtowns, or transit-oriented development
- behavioural outcomes such as encouraging the use of transit, walking or biking
- the creation of infrastructure consistent with smart growth principles, such as good quality transit or decentralized energy generation facilities.

The geographical scope of the report is limited to Canada and the US, where conditions are considered if not similar then at least relevant to our own and therefore where we may learn from experience with new financing mechanisms. Canadian initiatives are included in the study when they are innovative but not yet widely used and when they have potential for transferability to other jurisdictions in Canada.

The focus of the report is on “innovative” infrastructure funding mechanisms. Infrastructure is usually funded from special assessments, development charges, reserves, general borrowing, grants, and property taxes (as opposed to operating expenditures, which are funded only from grants, user fees and property taxes). Innovative funding mechanisms include any variation on the conventional mechanisms (such as borrowing backed by revenue from a specific source rather than by general municipal revenues, or development charges that vary according to the location of the project rather than applied municipality-wide) or any relatively new mechanism that is not already widely used in Canadian communities (such as a parking site tax or a vehicle registration tax). Innovation in funding mechanisms usually involves some change to local bylaws and administrative arrangements, but they may also require more far-reaching changes such as modifications to provincial legislation or funding arrangements.

1.3 Methodology

This study was carried out by a team of researchers in three steps:

- 1) **Scan of initiatives:** A review was conducted to identify innovative mechanisms being used to finance municipal infrastructure while simultaneously supporting smart growth outcomes. The review included initiatives in both Canada and the US and was conducted through an internet and literature search. Brief interviews with key stakeholders (such as municipal officials) were carried out in order to gather information not available from other sources. Based on this information, a database of initiatives was created including the following parameters:
 - type of mechanism
 - jurisdiction in which the mechanism was being used
 - date the mechanism was introduced
 - intended smart growth outcomes
 - transferability to Canada (for US initiatives)
 - contact information
- 2) **Case studies:** Based on the scan, 10 initiatives were selected for more detailed study. The selection was based on our desire to have the widest range of mechanisms from municipalities across Canada and the US represented in the set. For each mechanism, the municipality considered to have had the most experience with the tool was selected for inclusion in the report. The ten initiatives with the greatest potential for transferability to communities across Canada were chosen for full case study, while another five were the subject of “mini-case studies”, which presented similar information in less detail. The following information was collected for all case studies:
 - the municipal context
 - origin and history of the mechanism in that context
 - description of the mechanism and intended infrastructure and smart growth outcomes
 - linkage with other policies/programs at the municipal, provincial/state, or federal levels
 - administrative procedures
 - community engagement strategies
 - financial aspects of the mechanism, including the cost of implementation
 - actual infrastructure outcomes
 - actual smart growth outcomes
 - stakeholder perspectives on the mechanism
 - the use of the mechanism in other jurisdictions
 - transferability to (other) jurisdictions across Canada
 - sources of information
- 3) **Analysis:** Using the results of the research, we generated some observations on the potential of the 15 tools surveyed to raise money for infrastructure, achieve smart growth outcomes, and be replicated across Canada. The purpose of the analysis was to offer some insight into which tools might be of greatest interest to practitioners, depending on their local context and goals.

>> Moving people quickly at the Toronto International Airport



1.4 Outline of the Report

The report is organized into four sections:

- **Introduction:** provides background to the study, scope and methods used.
- **Overview of infrastructure funding mechanisms:** This section provides brief summaries of the 15 financing tools covered in the report. Each summary contains a short description of the tool, the advantages and disadvantages of using it, the potential smart growth outcomes, some examples of where the mechanism is currently being used, and a source of further information.
- **Case studies of funding mechanisms:** For each tool summarized in the previous section, we present a case study in which the tool is featured as a funding mechanism. The case studies present information on how the tool works in the particular setting concerned, challenges and barriers encountered in implementing the mechanism, infrastructure and smart growth outcomes achieved and observations about the use of the tool elsewhere and its transferability to (other) municipalities in Canada.
- **Conclusions:** The main report ends with concluding comments of the potential of the 15 tools surveyed to raise money for infrastructure, achieve smart growth outcomes, and be replicated across Canada.
- **Appendix:** The appendix contains the detailed information gathered for each of the ten full case studies. These case studies cover in greater detail the type of information found in the case study summaries, including background information and the full range of sources used to create the case study.

1.5 Sources

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Vander Ploeg, C. (2006). *New Tools for New Times: A Sourcebook for the Financing, Funding and Delivery of Urban Infrastructure*. Prepared for the Canada West Foundation.

2. Overview of Infrastructure Financing Mechanisms that Promote Smart Growth

>> There is a wide variety of financing tools that raise funds for infrastructure while promoting smart growth. This section briefly describes 15 such tools currently in use in the US or Canada. Each summary provides an overview of

the mechanism, indicates what kind of infrastructure it can be applied to, describes the potential smart growth outcomes, lists the advantages and disadvantages, identifies jurisdictions where the tool is being used, and provides an information source.

2.1 High Occupancy/Toll Lanes

Description

High Occupancy/Toll (HOT) lanes are a specialized type of High Occupancy Vehicle (HOV) lanes. Standard HOV lanes are limited-access highway express lanes, physically separated from regular highway lanes except at a limited number of interchange points. The use of standard HOV lanes is restricted to vehicles with at least two occupants, a measure intended to encourage carpooling. Unlike standard HOV lanes, HOT lanes are accessible to Single Occupancy Vehicles (SOVs) that pay a toll, while vehicles with two or more occupants continue to use them for free. The primary motive behind allowing SOVs on the HOV express lanes is to maximize the use of available capacity; in many cities, HOVs have been used under capacity while regular lanes are congested. The secondary motive is to generate supplemental revenues for bus routes operating on the HOV lanes.

HOT lanes typically use an automated, transponder-based tolling system. HOT programs can use congestion pricing – i.e., tolls that increase as a function of traffic volume, thereby discouraging congestion on the HOT lanes. Electronic billboards, located some distance before HOT lane entrances, inform motorists of the current price and allow them to decide whether or not to use the HOT lanes.

Applicable Infrastructure

- public transit (in the same highway corridor as the HOT lanes).

Smart Growth Outcomes

Depend on how toll revenues are spent:

- if revenues are spent on transit infrastructure and tied to TOD-supportive land use planning, may yield certain smart growth outcomes
- otherwise, could be counterproductive because they increase highway capacity for SOVs.

Advantages

- maximizes the use of available HOV lane capacity, avoids new highway construction
- provides a supplementary revenue stream for public transit services operating HOV lanes.

Disadvantages

- potential to increase single occupant car use by making more road capacity available
- questionable equitability: HOV lanes become 'luxury lanes' for those willing and able to pay

Examples

In the US: San Diego (see case study), Atlanta, Dallas, Denver, Houston, Los Angeles, Miami, Phoenix, San Francisco, Washington D.C., Seattle, and Minneapolis.

Information

"Converting High-Occupancy Vehicle (HOV) Lanes to High-Occupancy Toll (HOT) Lanes", Federal Highway Administration (US)
(see ops.fhwa.dot.gov/tolling_pricing/value_pricing/projtypes/hovhotlanes.htm).

2.2 Sector and Density Gradient Approach to Development Cost Charges

Description

Development Cost Charges (DCCs) are fees imposed by municipalities to recover the capital costs of the off-site infrastructure required to service new residential or commercial development. The charges are paid by developers on a one-time basis when the subdivision, rezoning, or the development plan is approved. Today, DCCs and their many variants are the most common means of financing growth-related infrastructure in most major Canadian and American cities. DCCs shift the burden of paying for infrastructure from the general public (i.e., through property taxes) to new residents and commercial tenants (assuming that the DCCs paid by developers are passed on to buyers and renters).

Under most DCC regimes, the charges are applied uniformly across the municipality, irrespective of the actual cost of delivering infrastructure to different types of development. Under the sector approach, DCCs are lower in sectors near the urban core and higher in those in the periphery. This reflects the lower cost of providing infrastructure for developments in centrally located sites, for which much of the needed infrastructure may be already in place. Under the density gradient approach, DCCs are lower per unit for high-density developments than for low-density developments. The gradient approach reflects the greater efficiency of providing infrastructure to higher density development due to lower distribution distances.

Applicable Infrastructure

The range of infrastructure that can be funded by DCCs varies from province to province. In BC,

for example, DCCs are restricted to covering the cost of roads, water distribution, sewage collection and treatment, stormwater management, and park infrastructure, while in Ontario, they cover these things plus police and fire stations, transit, and electrical facilities. In the US, DCCs have also been used for parking facilities, and recycling and solid waste collection facilities.

Smart Growth Outcomes

- compact growth:
 - infill development
 - contiguous development
 - densification
- transit-supportive development

Advantages

- places the burden of infrastructure costs on buyers of new homes rather than on the general tax-base
- allows municipalities to optimize their infrastructure investments and ensures that new infrastructure is built only if there is a demand
- provides a financial incentive for compact growth.

Disadvantages

- not always calculated to cover the full cost of infrastructure needed to support new development
- effectiveness can be compromised if development leapfrogs to a neighbouring with a different development charge regime
- can be difficult to determine how different densities and sectors impact infrastructure requirements when setting DCC levels
- does not cover the cost of operating and maintaining infrastructure.

Examples

- In British Columbia: Kelowna (see case study), the District of North Vancouver, Kamloops, and the Township of Langley use density gradients or sectoral approaches.
- Elsewhere in Canada: Sectoral system is used in some Ontario municipalities such

as Markham, Barrie, Ottawa, Region of Durham, Woodstock, and Richmond Hill.

- In the US, most states permit municipalities to impose impact fees to pay for off-site infrastructure services. Transportation impact fees are sometimes structured so that higher density developments near city cores pay less than greenfield developments on the urban fringe.

Information

"Development Cost Charges Best Practices Guide", Government of British Columbia (see www.cserv.gov.bc.ca/LGD/intergov_relations/library/DCC_Best_Practice_Guide_2005.pdf)

"Do Development Cost Charges Encourage Smart Growth and High Performance Building Design? An Evaluation of Development Cost Charge Practices in British Columbia", West Coast Environmental Law, 2003 (see <http://www.wcel.org/wcelpub/2003/14083.pdf>)

>> In Vancouver, businesses pay a parking tax



2.3 Parking Site Tax

Description

A parking site tax is applied to non-residential parking lots, including parking for shopping centres, offices, and commercial parking lots. The tax may be assessed in one of two ways: (1) either on a per parking space basis or (2) on a per parking area basis. The latter is believed to be more equitable and less susceptible to manipulation, given that the size and distribution of parking stalls could be easily altered but the total area of a parking lot could not. In the case of paid parking lots, a parking site tax may be complemented by a parking sales tax or special surcharge on parking fees.

A parking site tax may be applied by a special-purpose transportation authority or by a municipal government and is paid by the parking lot owner. The revenues from parking taxes are often used to help fund public transit but may be used for any transportation purpose.

Applicable Infrastructure

Public transit and roads.

Smart Growth Outcomes

- could lead to conversion of parking to more efficient land use and reduced car use
- helps to fund transit, further helping to reduce car use

Advantages

- incentive to reduce free parking
- advantageous to establishments with little or no parking facilities
- increases cost of vehicle parking, which may shift travel demand to other modes.

Disadvantages

- potential conflict with minimal parking requirements in many municipalities
- unpopular with businesses
- not related to distances travelled.

Examples

Metro Vancouver (see case study) is the only Canadian jurisdiction using parking taxes to fund transportation infrastructure. In the US, many cities have parking taxes but they are applied only to paid parking and take the form of an added sales tax. This type of tax is also quite common in Europe. In both the US and Europe parking taxes are used almost exclusively for transportation infrastructure and the needs of transit.

Information

Greater Vancouver Transportation Authority Act – Parking Tax Regulation, Government of British Columbia (see www.qp.gov.bc.ca/statreg/reg/G/GreaterVanTrans/347_2005.htm)

2.4 Land Value Taxation

Description

Land Value Taxation (LVT) is a specialized form of property tax. It is an ad valorem (value-based) tax that is levied only on land and is independent from the value of any improvement on the land, such as buildings, infrastructure, landscaping, etc. Regular property taxes, in contrast, are levied on the real estate value of a property, which is the combined value of land and all improvements to the land. A variant of LVT called ‘split rate taxation’ is a compromise between pure LVT and regular property tax – it considers the value of the land and the value of all improvements separately and assigns more weight to land value in the tax calculation. The motivation behind LVT is to discourage inefficient and unproductive land uses while encouraging infill development and densification.

Applicable Infrastructure

Roads, water distribution, sewage collection, sewage treatment, and park infrastructure.

Smart Growth Outcomes

- compact growth:
 - infill development
 - densification
- urban renewal

>> Downtown Vancouver's Stanley Park



Advantages

- discourages land speculation
 - encourages efficient land use.

Disadvantages

- can lead to gentrification and diminish supply of affordable housing
- tax level is not necessarily related to services received
- may be difficult to determine land value separate from the value of improvements on the land.

Examples

- In the US: Harrisburg (see case study) and several other cities in Pennsylvania.
- In Canada: cities in British Columbia, Alberta, Saskatchewan, and Manitoba.
- International: Melbourne and Sydney in Australia; Johannesburg in South Africa; Kingston in Jamaica.

Information

“Land Value Taxation Around the World”, Henry George Foundation (see www.henrygeorge.org/rem4.htm)

2.5 Standard Offer Contract

Description

A standard offer contract (SOC) is a long-term agreement between a power authority and a renewable electricity generating facility. Under a SOC, the power authority agrees to pay a qualifying generator a tariff significantly higher than the wholesale market price of electricity for a long period – anywhere from 10 to 20 years. The high tariff and long contract duration are intended to allow small renewable electricity generators to recover their costs. SOC programs are used to stimulate the rapid development of renewable electricity generating capacity.

To obtain an SOC, a renewable generator must meet certain eligibility criteria. Generally, there are three basic criteria: (1) the generator must use a renewable resource – i.e., wind, hydro, biomass, or solar; (2) the generator must not exceed a certain generating capacity; and (3) the generator must be in a location where the distribution grid has sufficient capacity to accommodate the generator's load. All generators that meet eligibility criteria are offered an identical contract (the same tariff for the same number of years) – i.e., SOC's are negotiation-free. In some cases, tariffs may vary according to the economics of the renewable resource. For example, for expensive technologies such as solar PV, tariffs may be higher than for other types of renewable generators. In this case, all eligible solar PV projects are offered the same tariff.

The costs of an SOC program can be included in the wholesale price of electricity. This way, electricity consumers shoulder the cost of the program proportionally to their level of consumption of electricity.

Applicable Infrastructure

Small renewable electricity generators in urban locations, especially wind turbines and solar photovoltaics.

Smart Growth Outcomes

Development of community-based renewable power generators

Advantages

- negotiation free: provides scope for participation to smaller players such as community co-operatives
- stimulates rapid development of renewable electric generating capacity
- leads to more distributed generation capacity, reducing waste from long-distance electric transmission.

Disadvantages

- can be inaccessible to small, community-based projects if financial and administrative burdens for admission to SOC program are too high or if the tariffs provided are too low
- less cost effective per megawatt of energy produced than generators developed through an RFP process.

>> Wind turbines are common sources of renewable electricity used in a standard offer contract



Examples

Exhibition Place Wind Turbine in Toronto (see case study).

Information

Renewable Energy Standard Offer Program, Ontario Power Authority (see www.powerauthority.on.ca/SOP/)

2.6 Stormwater Utility Fee Credits



Description

Some municipalities have stormwater utilities that collect user fees independently of water and sanitary sewage utilities. Stormwater fees typically apply to both residential and

>> The fees may be complemented by a system of discounts designed to encourage both residential and non-residential property owners to reduce their impervious surface areas and improve stormwater management...

non-residential properties and are usually calculated on the basis of the estimated impervious surface area on a property. The fees may be complemented by a system of discounts designed to encourage both residential and non-residential property owners to reduce their impervious surface areas and improve stormwater management, thereby reducing stormwater runoff from

their property. Property owners earn stormwater fee credits by implementing stormwater best management practices (BMPs) recognized by the stormwater utility. These can include, among other items, green roofs and permeable paving. Part of the revenues from stormwater fees can be used by the utility to offer grants to property owners to incentivize the use of BMPs.

Applicable Infrastructure

Stormwater collection infrastructure; stormwater-mitigating infrastructure such as green roofs and permeable paving.

Smart Growth Outcomes

Rapid deployment of green infrastructure.

Advantages

- gets homeowners and commercial property owners involved in developing green infrastructure
- self-financing – credits and BMP incentives paid for by stormwater fees
- reduces water pollution from stormwater runoff.

Disadvantages

- creates a significant new administrative burden.

Examples

- In the US: Minneapolis (see case study). Gainesville, Florida, Louisville, Kentucky, Durham, North Carolina, Cincinnati, Ohio, Austin, Texas, and King County, Washington State all offer credits for non-residential or commercial properties. Others, like Orlando, Florida, Wichita, Kansas, Charlotte, North Carolina, and Tulsa, Oklahoma offer a credit to multifamily residential properties or larger properties of all uses.
- In Canada: Regina has a separate stormwater fee but does not use it to encourage best management practices.

Information

Storm and Surface Water Management, City of Minneapolis (see www.ci.minneapolis.mn.us/stormwater/index.asp)

2.7 TOD Policy Leveraging

Description

Transit Oriented Development (TOD) policy leveraging is the use of transportation infrastructure funding to exert pressure on municipalities to make land use planning provisions consistent with the principles of TOD along proposed transit corridors. For example, a regional transit authority can withhold money earmarked for new transit infrastructure until TOD-supportive land use provisions are implemented along the planned transit corridor. The funding authority determines an overall density threshold that development in a new transit corridor must meet. The threshold depends directly on the planned capacity of the transit system – i.e., the higher the capacity, the higher the threshold. The funding authority may give affected municipalities grants for transit-supportive land use planning for the immediate area around transit nodes and for neighbourhoods within a certain radius of the nodes. Once all corridor municipalities have implemented transit station area plans, the transit authority evaluates whether the desired density threshold has been met. If satisfied with the results, it releases regional discretionary funds to build the planned transit infrastructure.

Applicable Infrastructure

Transit, transit-related street improvements.

Smart Growth Outcomes

Drives TOD, mixed-use, and densification

Advantages

- ties transit investment strongly to land-use planning
- emphasizes vertical (regional-municipal) and horizontal (inter-municipal) coordination.

Disadvantages

- implementation of inter-municipal transit infrastructure can be delayed by non-compliance of some municipalities
- involves complex administrative processes.

Examples

San Francisco Bay Area (see case study).

Information

Transportation 2030 Plan, Metropolitan Transportation Commission (see www.mtc.ca.gov/planning/2030_plan/index.htm)

2.8 Fuel Tax Transfer

Description

Fuel tax transfers are an example of intergovernmental tax revenue sharing. In Canada, both provincial and federal governments collect fuel tax and in some cases share a portion of the fuel tax revenues with a local government agency. The senior government promises to transfer a fixed portion (a certain number of cents per litre) of fuel tax revenues collected within the boundaries of a particular municipality or agglomeration. In some cases, the provincial government may increase fuel tax within a certain jurisdiction to increase the amount of fuel tax transferred to that jurisdiction

>> Fuel tax transfers are a method that federal and municipal governments share revenue



2.8 Fuel Tax Transfer continued

without excessively diminishing the portion it keeps for itself.

Fuel tax monies may either be transferred directly to the local jurisdiction or may be pooled in a special transportation infrastructure fund, to which local governments must apply for grants for specific transportation projects.

Applicable Infrastructure

Transit, roads.

Smart Growth Outcomes

If used for transit improvements and tied to land use planning, can drive TOD and densification.

Advantages

- uses an existing tax stream
- revenue related to infrastructure use
- stable and predictable
- if a fuel tax increase occurs, can discourage automobile use

Disadvantages

- not tied exclusively to transit, can be used for roads
- if an existing fuel tax is used, automobile use is not inherently discouraged

Examples

Edmonton (see case study) and Calgary in Alberta, 5¢ per litre, transferred to city via grant applications; Metro Vancouver in BC, 12¢ per litre, transferred directly to regional transit authority; Montreal Metropolitan Community, 1.5¢ per litre, transferred directly to regional transit authority.

Information

City Transportation Fund (CTF), Province of Alberta (see www.infratrans.gov.ab.ca/INFTRA_Content/docType359/Production/ctf.htm)

Government of Canada New Deal for Cities and Communities (NDCC), Province of Alberta (see www.infratrans.gov.ab.ca/INFTRA_Content/docType607/Production/ndcc.htm)

2.9 Tax Increment Financing

Description

>> Tax increment financing (TIF) is the name given to the practice of financing capital projects through the increase in property tax revenues...

Tax increment financing (TIF) is the name given to the practice of financing capital projects through the increase in property tax revenues – i.e., the ‘tax increment’ – that such projects generate. The insertion of new amenities into an existing neighbourhood will tend to drive up property

values and, consequently, property tax revenues. At the onset of a renewal project, the boundaries of the project area in which capital investments will be made are determined. The current property tax revenue in the area is set as the baseline property tax level. When the project is complete, the municipality dedicates the tax increment above the baseline level towards repaying the loans made to finance the capital improvements, ending essentially when loans made at the beginning of the project are repaid. At this point, the entire property tax revenue (baseline + increment) goes to the municipality’s general fund, thereby increasing its tax base.

Applicable Infrastructure

Public transit, parks and public spaces.

Smart Growth Outcomes

- allows transit infrastructure to be funded through TOD
- leads to densification, links infrastructure funding to infill development
- can ultimately help mitigate urban sprawl

Advantages

- new infrastructure is self-funding if TIF properly designed

- no burden on capital reserves and public funding sources
- stimulates private sector investment.

Disadvantages

- fails if sufficient gains in property values are not obtained
- can lead to gentrification and loss of affordable housing
- could siphon off investment that would have gone elsewhere in the municipality.

Examples

- In the US: Portland, Oregon (see case study); allowed in all states except Arizona and used in numerous cities.
- In Canada: authorized only by Alberta and Manitoba; in use in Calgary; being considered by the City of Toronto for waterfront revitalization.

Information

The US Experience with Tax Increment Financing (TIF), City of Calgary (see www.calgary.ca/docgallery/bul/corporateproperties/final_report_tif.pdf)

>> Calgary, Alberta



2.10 Tax Base Sharing

Description

Tax-base sharing is grounded in the idea that communities experiencing growth should share the benefits with other communities in the same urban region. Either commercial and industrial or total property tax-base revenue increases, above a fixed baseline level, are pooled in a regional fund. Monies from the fund are redistributed to communities in the region according to an equalization formula. Communities with little or no tax-base growth become net recipients of equalization payments whereas those with considerable tax-base growth become net donors. Generally, the equalization formula is designed to minimize, but not eliminate, tax-base growth disparities between municipalities.

Applicable Infrastructure

Any urban infrastructure.

Smart Growth Outcomes

- mitigates sprawl-inducing factors
- reduces competition between municipalities to attract new development
- facilitates regional coordination.

Advantages

- reduces migration of residents and businesses from higher to lower-taxed municipalities
- reduces service and infrastructure discrepancies between municipalities.

Disadvantages

- complex administration
- not tied directly to infrastructure investment.

Examples

- In the US: Minneapolis-St. Paul region (see case study) in Minnesota; Charlottesville-Albemarle in Virginia.
- In Canada: Island of Montreal municipalities.

Information

"Minnesota's Fiscal Disparities Programs: Twin Cities Metropolitan Area and Iron Range", Minnesota House of Representatives (see www.house.leg.state.mn.us/hrd/issinfo/issfisdis.pdf)

2.11 Vehicle Registration Surcharges

Description

A vehicle registration surcharge is a tax applied to vehicles registered to addresses within a particular jurisdiction. The form of this tax varies, with some jurisdictions using an ad valorem approach based on the value of the vehicle, while others use a flat-rate, fixed amount per vehicle. The tax is usually collected annually, along with the provincial or state vehicle registration fee. The surcharge can apply to both private and commercial vehicles. Some local governments charge higher rates for larger vehicles that put more stress on roadway infrastructure.

Revenues from the tax are often used to offset the costs of administering the vehicle registration system and traffic enforcement. In some jurisdictions, however, the tax is dedicated to funding transit improvements.

In the US, vehicle registration surcharges are generally considered a local option tax. This means that state legislation grants local jurisdictions (such as counties or individual municipalities) the authority to assess vehicle registration surcharges. In some states, local jurisdictions have direct authority to enact vehicle registration surcharges whereas in other states voter approval is required. The enabling legislation usually specifies a ceiling for the vehicle registration surcharges.

Applicable Infrastructure

Public transit, roads.

Smart Growth Outcomes

- if used for transit, can lead to reduced car use and car dependency
- if differential rates are used, provides incentive to use smaller, more efficient vehicles.

Advantages

- stable and predictable source of funding
- can be used to generate dedicated revenue stream for transit.

Disadvantages

- not related to actual intensity of infrastructure use
- if flat rate, questionable equitability.

Examples

- In Canada: Montreal (see mini case study); Quebec City, Gatineau, Trois-Rivières, Saguenay, Sherbrooke, and Saint-Jérôme,
- In US: allowed in 33 states, implemented by local jurisdictions in 27 states.

Information

Transport en commun, Ministère de transport du Québec (see http://www.mtq.gouv.qc.ca/portal/page/portal/grand_public/transport_collectif/transport_commun).



2.12 Commuter Tax

Description

Commuter taxes are payroll income taxes (PITs) paid by people employed but not residing in a given jurisdiction. The main idea underlying commuter taxes is that, in their absence, people who work in but live outside a given jurisdiction get a “free ride” – i.e., they benefit from the infrastructure and services of their work jurisdiction but only pay taxes in their home jurisdiction. In most cases, commuter taxes are used by the central city in an urban agglomeration and are intended to help unburden central city taxpayers from the cost for infrastructure and services used regularly by non-residents.

In the US, municipal commuter taxes are generally lower than municipal payroll income taxes for residents. They are typically in the 0.25 to 2% of earned income range, although a few jurisdictions impose higher rates.

Applicable Infrastructure

Public transit, pedestrian and cycling facilities, parks and public spaces.

Smart Growth Outcomes

Mitigates sprawl-inducing factors.

Advantages

- mitigates ‘free rider effect’, reduces tax burden on property owners in central city
- higher elasticity than property tax, therefore fewer adverse effects such as flight of businesses and resident to the suburbs.

Disadvantages

- not tied to infrastructure use, may tax many people who do not benefit from the infrastructure
- ‘taxation without representation’ – commuters do not vote in the jurisdiction that collects commuter tax
- would require legislative changes to be applied in Canada.

Examples

Used by cities in 13 US states. Notable examples include Philadelphia (see mini-case study), Pittsburgh, and Scranton in Pennsylvania; New York City (until 1998) and Yonkers, New York.

Information

“Commuter Taxes: Milking Outsiders for All They’re Worth”, National Taxpayers Union Foundation (see www.ntu.org/main/press_papers.php?PressID=148&org_name=NTUF).

2.13 Tax-Exempt Tax Revenue Bonds

Description

A bond is a type of loan which the borrower promises to repay (including interest) by a specific date. In the case of tax-exempt bonds, the income earned by the bondholder in the form of interest is exempt from federal and/or provincial income taxes. Consequently, tax-exempt bonds can have a lower interest rate than the prevailing market rate. The use of tax-exempt bonds therefore allows municipalities to reduce the cost of borrowing.

Revenue bonds are repaid with a specific, dedicated revenue stream rather than from a city’s general revenue pool. In many cases, the revenue generated by the new infrastructure itself (e.g., from tolls on a highway or fares on a transit system) can be used to repay the bonds. Alternatively, a portion of revenues from an existing tax or the entire revenue from a new, special-purpose tax can be dedicated to the repayment of the bonds. The latter option is open to jurisdictions in US that have the authority to implement special-purpose, temporary taxes, often called ‘local option’ taxes. These can include fuel taxes, sales taxes, income taxes, property taxes, parking taxes, etc. Many of states that allow local option taxes require that

2.13 Tax-Exempt Tax Revenue Bonds continued

local governments seek voter approval before implementing such a tax. In effect, the issuance of revenue bonds may also be contingent on voter approval for the new tax in this case.

Applicable Infrastructure

Roads and transit.

Smart Growth Outcomes

If used for transit and TOD-supportive projects, can lead to reduced car dependency.

Advantages

- rapid implementation of large projects, much faster than a pay-as-you go approach
- cheaper than other types of borrowing.

Disadvantages

- higher cost than pay-as-you go approach
- bonds entail significant administrative overhead for borrower
- would require legislative changes to implement in Canada.

Examples

Denver, Colorado's FasTracks project (see-mini case study) and Los Angeles Metro expansion, both repaid partially through local sales tax hikes; used by cities in California, Colorado, Florida, Nevada, New York, South Carolina, Texas, Virginia, and Washington.

Information

"Innovative Finance: Limited and Special Tax Bonds", American Association State Highway and Transportation Officials (see www.innovativefinance.org/topics/finance_mechanisms/bonding/bonds_limited.asp)

2.14 Local Option Sales Tax

Description

Local-option sales taxes (LOSTs) are a special-purpose taxation mechanism used in 46 US states. The tax usually takes the form of a small premium (between 0.5% to 1.0%) on top of the state sales tax, applied

>> Local-option sales taxes (LOSTs) are a special-purpose taxation mechanism used... to fund special projects, especially capital-intensive projects, and are enacted only for a limited time...

only within a particular local jurisdiction. They are typically applied at the county level (which then shares the revenue with municipalities in its jurisdiction), although most of the states with LOSTs allow them to be applied at the municipal level as well.

They are generally used to fund special projects, especially capital-intensive projects,

and are enacted only for a limited time – usually until the expected completion of the project. A given jurisdiction can have multiple LOSTs, each providing funding for a different project. The revenue may be used for a number of different operating and capital purposes. At the county level, it is often dedicated to roadways, while in the cities, most of the revenue is used to support the operations and infrastructure of public transit.

Most but not all states require ballot approval for new LOSTs and have a cap on the maximum rate that can be charged. The state administers and collects the LOST together with the state's own sales taxes, returning the LOST portion of the revenue, minus administrative expenses, to the appropriate local jurisdiction.

Applicable Infrastructure

Public transit, roads.

Smart Growth Outcomes

If used for transit and TOD-supportive projects, can reduce car dependency.

Advantages

- transparent, democratically approved
- stable and predictable revenue stream
- dedicated to a specific project
- rapidly raises large amounts of money.

Disadvantages

- not tied to infrastructure use, may tax many people who do not benefit from the infrastructure
- would require legislative changes to be applied in Canada.

Examples

Denver (see mini-case study) and Aspen in Colorado; San Francisco Bay Area in California; Kansas City in Missouri; Canton and Franklin County in Ohio; Grapevine in Texas; and Finley, Spokane, Everett, King County (Seattle), and Selah City in Washington

Information

"Web-Only Document 102: Future Financing Options to Meet Highway and Transit Needs", Research document prepared for the Transportation Research Board *onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w102.pdf*.



2.15 Grant Anticipation Revenue Vehicles

Description

Grant Anticipation Revenue Vehicles (GARVEEs) are a type of security used in the US to finance transportation projects. A GARVEE is a bond, note, certificate, mortgage, lease, or other debt financing instrument issued by a state, county, municipality or other public authority and intended to be repaid (including interest) with anticipated funds from the federal government. The Federal Highway Administration must approve all requests for GARVEE financing. There are two principal conditions that a transportation project must meet to obtain GARVEE financing: (1) the project must be part of the state transportation improvement plan; and (2) the state must match the federal governments funding contribution. The state can meet the matching funds requirement by making an upfront contribution; by committing to match federal funds on a payment-by-payment basis; or by issuing a separate series of bonds.

GARVEEs can only be used for specific transportation projects eligible for federal-aid funds. The mechanism is usually considered a last resort for funding large projects with no potential to generate their own revenue stream and are best used in situations where the cost of delay outweighs the cost of borrowing. Typical applications of GARVEE include highways, congestion mitigation projects, transit, and bridge replacement.

Applicable Infrastructure

Road and public transit.

Smart Growth Outcomes

- if used for public transit improvements, reduction of car dependency.

Advantages

- rapid implementation of large projects, avoids waiting for government funds to be released
- can be used to leverage large amounts of financing.

2.15 Grant Anticipation Revenue Vehicles continued

Disadvantages

- more expensive than pay-as-you go
- claim on anticipated federal funds for several years; no new projects possible until the GARVEE is repaid
- risk that federal funding will not materialize beyond current funding period.

Examples

New Jersey Transit Light Rail Extension (see mini-case study), several transit systems in California.

Information

"The Benefits of TEA-21 Funding Guarantees", American Public Transport Association (see www.apta.com/government_affairs/laptatest/parker.cfm)

3. Case Studies of Financing Mechanisms



>> The previous section outlined a range of 15 mechanisms that can be used by local and regional authorities to raise money for infrastructure projects while supporting smart growth outcomes. In this section, we present 14 case studies (one case study – Denver – covers two tools) of these mechanisms in action in Canada and

the US. Each case study presents information on how the mechanism was used to fund infrastructure and achieve smart growth outcomes in a specific jurisdiction and offers a brief assessment of the success of the initiative, the barriers encountered and the issues that may be raised by transferring the mechanism to (other) jurisdictions in Canada.



Of the 14 case studies presented here, ten are based on longer studies that appear in the Appendix. The full case studies provide greater detail in terms of the background conditions, context, and motivation for implementing the funding mechanism and give specifics on the financial aspects and outcomes, along with an assessment of the mechanism from the point of view of various stakeholders. Full case studies were not prepared for four funding mechanisms

used in the US (Commuter Tax, Local Option Sales Tax, Tax-Exempt Tax Revenue Bonds, and Grant Anticipation Revenue Vehicles), largely due to the fact they would all require major legislative changes to implement in the Canadian context. A full-scale case study was not prepared for one mechanism (Vehicle Registration Surcharges) because the tool is relatively straight-forward and could be described in a briefer format.



3.1 San Diego: High Occupancy/Toll Lanes

San Diego County in California has implemented High Occupancy/Toll (HOT) express lanes on a 13-kilometre (8-mile) stretch of the I-15 freeway. The two reversible express lanes, built in 1988, are in the median between the regular freeway lanes. The direction of traffic is reversed midday to maximize capacity in the principal commuting direction (CADOT, 2002). In the first few years after construction, the express lanes were open only to high occupancy vehicles (HOVs). Traffic volume on the express lanes was persistently far below capacity while there was intense congestion on the regular lanes.

In 1991, the mayor of one of the municipalities belonging to the San Diego Association of Governments (SANDAG) proposed that the surplus of capacity on the express lanes be 'sold' through road tolls and that these tolls be used to fund public transit improvements in the I-15 corridor. The SANDAG approved the idea in 1991 but required state approval before proceeding with implementation of the plan. State approval was granted in 1993 and the planning of the HOT program started in late 1996 (King et al., 2007).

In December 1996, SANDAG launched an initial 16-month trial phase for the HOT lane program. During this phase, drivers wishing to enter the lanes were required to purchase a monthly 'ExpressPass' allowing unlimited access to the HOV lanes. In the second phase, launched in June 1997, the monthly fee scheme was replaced with a pay-par-use system, dubbed FasTrak. To use the system, motorists must open a FasTrak account and lease a transponder. The transponder sends signals to antennas located at the express lane entrances and the associated FasTrak account is debited.

FasTrak tolls for single occupancy vehicles (SOVs) are variable. Tolls depend on the volume of traffic on the express lanes, which is monitored with electronic sensors (Tollroads News, 1998). As the volume of traffic on

the express lanes increases, the tolls go up, discouraging congestion. In principal, the tolls can vary from \$0.50 to \$8.00, although they typically remain in the \$0.50 to \$4.00 range (CADOT, n.d.). Electronic billboards inform motorists of the current toll rate; the billboards are located a fair distance before the entrance to the express lanes, allowing motorists time to decide whether or not to enter.

Tolls on the I-15 generate between \$1.3 million and \$2.5 million per year. The money is allocated in the following way: (1) \$60,000 to California State Highway Patrol, which enforces high occupancy or toll payment on the express lanes; (2) \$750,000 to \$1 million for operation and maintenance of the tolling system and for customer service; (3) \$490,000 to \$1 million for the 'Inland Breeze' bus service that operates on the I-15 corridor; and (4) the remainder for miscellaneous material costs.

The HOT program has been successful in increasing traffic volume on the express lanes (CADOT, n.d.). In 2002, toll-paying SOVs represented a 25% share of the total traffic on the express lanes; the majority of traffic continued to be carpools (CADOT, 2002). The program was also successful in meeting its other objective – i.e., raising money for public transit improvements. Revenues from the HOT program allowed SANDAG to add two new major bus routes, dubbed Inland Breeze, to the four existing bus routes operating in the I-15 corridor (Hultgren and Kawada, 1999).

In terms of its contribution to the attainment of smart growth principles, the implementation of the HOT lane program has led to the improvement of public transportation service in the I-15 corridor and has attracted non-captive riders. However, the construction of a parallel highway close the I-15 corridor and increases in parking capacity in downtown San Diego can poses challenges for future transit use in the I-15 corridor. SANDAG is currently investigating the potential to implement transit-oriented development (TOD) along

the I-15 corridor with a view to bolstering transit use, an idea very much in line with the principals of smart growth.

Barriers to implementing a similar, congestion-priced HOT lane scheme in Canada would likely be of a political nature. Unlike in the United States, there is a dearth of experience with road tolls in Canada. As highway infrastructure has historically been financed through fuel tax and general tax revenues, Canadian motorists are likely to resist the prospect of paying for something that they have long perceived as 'free'. Nevertheless, Ontario's experience with the Highway 407 Express Toll Route (ETR), a bypass of Highway 401 in the Greater Toronto Area (GTA) – the country's busiest highway, as well as BC's tolled Coquihalla highway – demonstrate that pay-per use expressed lanes with an automated tolling system can be feasible in Canada.

Sources

California Department of Transportation (CADOT). (2002). *Fact Sheet: I-15 Express Lanes*. Web page (available at <http://www.dot.ca.gov/dist11/facts/15hov.htm>).

_____. (n.d.). I-15 Frequently Asked Questions (available at <http://www.dot.ca.gov/dist11/projectinfo/featuredproject/15managed/faq.htm>).

Hultgren, L. and Kawada, K. (1999). 'San Diego's interstate 15 high-occupancy / toll lane facility using value pricing' in *ITE Journal* June 1999 (available at http://findarticles.com/p/articles/mi_qa3734/is_199906/ai_n8865580/).

King, D., Manville, M. and Shoup D. (2007). 'The political calculus of congestion pricing' in *Transport Policy* 14, p. 118 (available at <http://shoup.bol.ucla.edu/PoliticalCalculus.pdf>).

Tollroads News. (1998). *Dynamic Pricing: San Diego*. New Article (available at www.tollroadsnews.com/node/2070).

3.2 Kelowna: Sector and Density Gradient Approach to Development Cost Charges

The City of Kelowna adopted its first development cost charges (DCC) bylaw in 1988. The initial DCCs were lower in the central city and higher in the periphery. The differential DCCs were intended to reflect the lower capital investments for infrastructure required by developments built near existing infrastructure in the central city as compared to investment required by development in non-serviced areas in the periphery.

In the mid-1990s, research on development costs commissioned by the City of Kelowna brought to light the possibility of obtaining even greater economies on infrastructure costs by encouraging a density gradient – i.e., by encouraging development densities

>> The DCC program is considered successful and appears to have contributed to smart growth objectives in Kelowna.

to be higher as a function of their proximity to existing infrastructure. A report produced by an independent researcher in the late 1990s recommended that the City improve housing affordability and compact development by reducing DCCs

for developments featuring high-density, multi-family dwellings while raising them for those primarily featuring low-density, primarily single-family dwellings (Government of British Columbia, 2005). In 2001, the City adopted an Official Community Plan that provided for higher densities near existing infrastructure and proposed a new DCC structure reflecting the different infrastructure costs foreseen for different development densities. Under this the new DCC structure, development charges were raised considerably for low-density developments (City of Kelowna, 2007a).

3.2 Kelowna: Sector and Density Gradient Approach to Development Cost Charges continued

Kelowna's DCCs vary according to two factors: density and geographic location. There are four density categories: (1) 1 to 15 units/hectare; (2) 16-35 units/hectare; (3) 36-85 units/hectare; and (4) more than 85 units/hectare. For each of the four density categories, the cost of providing five different types of infrastructure is calculated for predefined geographic sectors. The types of infrastructure considered include (1) parks, (2) roads, (3) water, (4) sewage collection, and (5) sewage treatment facilities. There are seven different cost sectors for roads, three different cost sectors for water, and two different cost sectors for sewage trunk infrastructure and sewage treatment facilities; the cost of parks is assessed at the same rate throughout the city. Thus, the DCC levied on a developer for a particular development depends on which density category it belongs to and in which geographical sector it is located (City of Kelowna, 2007b). The method for calculating DCCs in British Columbia is explained at length in the Government of British Columbia's (2005b) 'Development Cost Charge: Guide for Elected Officials'.

The main challenge in implementing density- and sector-based DCCs in Kelowna was developer resistance. Developers, worrying that the density gradient scheme and higher DCCs would have a negative impact on single-family dwelling developments, lobbied intensively against the new measures. Ultimately, in 2003, Kelowna's City Council acquiesced to developers' demands by softening the density gradient by-law and lessening the impact on single-family dwellings.

The DCC program is considered successful and appears to have contributed to smart growth objectives in Kelowna. The combined density- and sector-based DCC fee structure is believed to have helped Kelowna optimize its infrastructure investments. The program's success can be partly attributed to the regulatory, financial, and logistical support that the City has received from the BC Ministry of Community Services. It can also be attributed to the City's good public consultation program, which has allowed it to adjust DCC fees to fit with market trends. By being tied

closely to the Official Community Plan (City of Kelowna, 2004), which emphasizes a number of smart growth principles, the DCC program is contributing to more compact and infrastructure-efficient development.

There are nevertheless a few challenges to achieving smart growth goals through the use of DCCs. Currently, Kelowna's DCCs are tied to development densities expressed in units per area; using floor-area ratio (FAR) might yield better density gradients and improve affordability. Another challenge is ongoing sprawl in neighbouring municipalities with lower DCC rates, which undermines the use of DCCs in Kelowna to cover the cost of infrastructure and promote compact growth. A third challenge is the effect of growth pressures on the affordable housing market. Kelowna may require new measures to ensure an adequate supply of affordable housing.

Other municipalities in BC use DCCs similar to Kelowna's, including the District of North Vancouver, Kamloops, and Langley. Outside of BC, a similar approach to development charges has been taken, for example, by the City of Ottawa, which has been waiving development charges in downtown areas in order to encourage densification since 1994. There seem to be few if any barriers to implementing sector- and density-based DCCs in other urban areas across Canada. The key requirement is provincial legislation enabling municipalities to impose DCCs. Besides BC, DCCs are currently allowed in Alberta, BC, Ontario, Nova Scotia and Saskatchewan. Quebec is presently considering DCC-enabling legislation.

In the US, DCCs (known as impact fees) are widely used to raise funds for off-site infrastructure. For example, transportation impact fees (IFs) are a type of impact fee that is used specifically to pay for off-site improvements to existing transportation infrastructure needed as a result of new development. Fees vary according to location and density. They are often

significantly lower in central locations, well-served by existing transit service and pedestrian and cycling facilities, as compared to peripheral locations. Transportation IFs also vary by density: for residential developments, the cost per unit declines as the number of units per area increases; similarly, for commercial uses costs per square foot decline as FAR (floor to area ratio) increases. For each type of land use recognized by the given city, fees are calculated according to a complex formula that determines the cost of the transportation infrastructure improvements needed to accommodate the additional traffic volume generated by the given land use. Transportation IFs of this type are in place in Orlando, Florida, and several jurisdictions in Oregon, Washington, and California.

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3.3 Vancouver: Parking Site Tax

The parking site tax (ST), implemented by the Greater Vancouver Transportation Authority (GVTA), also known as TransLink, came into effect in January 2006. The tax is applied to all non-residential parking areas in all 21 municipalities in Metro Vancouver, charging them an annual rate of \$0.87 per square metre. In total, over 40,000 properties comprising about 25,500,000 square metres of parking space are subject to the parking ST (BC Assessment, n.d.). Gross revenues from the tax are approximately \$20 million per year, or about 4% of TransLink's annual budget. Combined with TransLink's other revenues, the parking ST has helped to finance transit, cycling infrastructure, and major roads throughout the region.

TransLink was created through the BC Government's GVTA Act of 1998. The Act transferred planning, funding, and taxation responsibilities for transit, ferries, and major roads in Metro Vancouver to TransLink (Transport Canada, 2006). Among other powers, the Act gave TransLink the power to raise money through two types of parking taxation: (1) an ad valorem tax (AVT) on paid parking, ranging from 7% to 21%, and (2) a parking site tax that could only be applied to non-residential parking lots. The Act allowed the latter to be assessed in one of two ways: (1) either on a per parking space basis or (2) on a per parking area basis. TransLink has been charging a 7% AVT on paid parking since 1999 (Litman, 2006).

TransLink envisaged the possibility of increasing the AVT but faced stiff opposition from municipalities with large amounts of paid parking, especially the City of Vancouver. The City was concerned that higher parking costs would hurt downtown businesses, encouraging motorists to favour suburban locations with free parking. The City, along with the municipalities of Burnaby and White Rock, lobbied TransLink to adopt a Metro-wide parking ST. Supporters of the parking ST argued that since all businesses in the region benefited from having an efficient transportation system, all should contribute to its funding. Whereas public opinion polls seemed to favour the parking ST (TransLink, 2005), business groups rallied against the idea. Despite the strong opposition

from the business community, TransLink's Board approved the initiative to develop a parking ST in 2004. Most of the next two years were spent designing the new tax, for which there were no precedents anywhere in Canada.

A key decision TransLink needed to take was whether to assess the new tax on a per parking space or a per area basis. TransLink chose the latter on the grounds that it is more equitable and less susceptible to manipulation given that the size and distribution of parking stalls could be easily altered while the total area of a parking lot could not. TransLink decided to set the parking ST rate at \$1.02 per square metre to meet its \$25 million budget target for parking revenues. The rate was dropped in mid-2006 to the current rate of \$0.87 per square metre because the parking revenue target had been reduced to \$20 million as a result of an unexpected surge in revenues from transit fares (TransLink, 2006).

Business groups, represented by the Park the Tax Coalition, did not agree with TransLink that the tax was fair and equitable. The Coalition argued that the parking ST constituted (1) a hidden tax that would ultimately be passed on to consumers through higher prices; (2) a double tax in the sense that parking lot owners were already liable for regular property taxes; (3) an inequitable tax because it 'narrowly' targeted "one economic sector" and because it hit business that rely on off-street parking harder than those relying mostly on on-street parking; and (4) an unfair tax because it was applied to ancillary areas, such as driveways, that were not used for parking. Also, the Coalition argued that the tax was unfair since it was applied to minimum commercial parking supplies required by municipal bylaws. (Park the Tax Coalition, n.d.)

The parking ST's impacts on smart growth in Metro Vancouver are debatable. Arguably, the tax has made only a small contribution to TransLink's budget and its impact on infrastructure funding has been limited. As it has been less than two years since the tax has been implemented, it is difficult to gauge its impact on the provision of parking spaces. There is no indication that the tax has encouraged large retailers, such as Wal-Mart, to reduce their parking supply.

Parking ST is essentially a specialized type of property tax and should therefore lie within the scope of powers conferred upon most municipalities in Canada. While there may be few legislative barriers to such a tax, Metro Vancouver's experience shows that municipalities considering this type of tax are likely to encounter fierce and well-organized opposition from business groups.

It appears that the Park the Tax Coalition's lobbying efforts against the parking ST have paid off. On November 29th, 2007, the Government of BC passed Bill 43, legislation that replaces the 1998 GVTA Act and discontinues TransLink's ability to assess parking ST. As a result, the tax will be discontinued as of January 1, 2008.

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3.4 Harrisburg: Land Value Taxation

>> Capitol Complex in Harrisburg, Pennsylvania



The City of Harrisburg, the capital of Pennsylvania, began gradually phasing in split rate land value taxation (LVT) in 1975. Since the introduction of a split rate LVT, the mill rate on land has been gradually raised while the mill rate on improvements has gradually decreased. The changes in the mill rates on land and on improvements were revenue neutral – i.e., they were intended to keep total property tax revenues the same while redistributing the tax burden. Initially, in 1975, the ratio of tax on land to tax on improvement was set at 1.4:1. In the 1980s, the City made split rate LVT central to its economic development and land use strategy and raised the land to improvements ratio to 3:1. The ratio was raised again in 1999 to 4:1 and again in 2002 to 6:1, where it remains today (City of Harrisburg, 2005).

Harrisburg adopted the split rate LVT for two principal reasons: (1) it wished to encourage infill development and densification; and (2) it wished to curb land speculation, which had been rampant in the decade before the new property tax system was introduced (Reed, 2003). The logic underpinning split rate LVT is relatively straightforward: by putting more emphasis on land value rather than improvements, the tax discourages unproductive land uses and encourages land improvements. As empty or underused lands are liable for property taxes almost as high as those for lands with valuable improvements, there is a strong disincentive for landowners to 'sit on lots' and engage in speculation (Reed, 2003). Since, landowners' tax burdens do not increase drastically if they add improvements to their properties, there is much less of a disincentive to upgrade than under a regular property tax scheme.

Harrisburg has been successful in reversing the trend of economic decline and ending the plague of land speculation that it faced at the time split rate LVT was introduced (Vincent, 2007). There is little doubt that the tax contributed to the Harrisburg's turnaround, although other factors have arguably also played in the city's favour.

The split rate LVT has helped Harrisburg achieve a pattern of development more consistent with smart growth by helping to stimulate infill development; the number of empty or underused lots has decreased from 4,200 to 500 since 1982, a decrease of approximately 85%. Among these infill projects, at least 300 are residential. There is also evidence suggesting that Harrisburg has been successful in attracting downtown development; several large firms have relocated to Harrisburg's downtown core in the last five years.

Split rate LVTs are used in several municipalities across Pennsylvania. Internationally, similar tax schemes are used in major cities such as Melbourne and Sydney in Australia, Johannesburg in South Africa, and Kingston in Jamaica (Bird and Slack, 2002; Henry George Foundation, n.d.). A number of municipalities in British Columbia, Alberta, Saskatchewan, and Manitoba separate the land and building components of property taxes and put more weight on the land aspect. Around half of BC's municipalities exempt landowners from 50% of taxes on land improvements; a handful of municipalities exempt landowners from more than half. In Alberta and Saskatchewan, certain municipalities exempt landowners from up to 40% of land improvements tax, whereas in Manitoba municipalities can exempt up to about 30% of land improvements tax. None of the systems in use in these provinces is nearly as strongly biased towards land value as they are in Harrisburg; however it appears that nothing is preventing them from doing so. Applying LVT in other provinces would require legislation enabling municipalities to use this approach.

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3.5 Toronto: Standard Offer Contract

In Ontario, Standard Offer Contract (SOC) is the name given to agreements between small, renewable electricity generators and the Ontario Power Authority (OPA). Under an SOC, the OPA agrees to purchase electricity from a renewable generator at a fixed tariff, annually adjusted for inflation, over a 20-year period. In contrast to conventional procurement methods for electricity, there are no negotiations involved in securing a SOC. A party wishing to enter a SOC must simply meet certain eligibility criteria. All parties meeting the criteria are issued contracts with identical conditions – i.e., the OPA gives them a 'standard offer'.

To be eligible for a SOC, an electricity generating facility must meet the following basic criteria: (1) it must exploit one of four renewable energy resources, namely wind power, hydro power, biomass, or solar power; (2) have an annual generation capacity under 10 MWh; and (3) be located in area where the distribution grid has available capacity (OPA, 2006). Eligible wind, hydro, and biomass projects are paid the same fixed tariff, which

was \$0.11 per kWh in early 2007. Solar photovoltaic projects are paid a significantly higher tariff (\$0.42 per kWh in early 2007), reflecting the high cost of this technology. The current wholesale price for electricity, at about \$0.05 per kWh (IESO, 2007), is significantly lower than the tariffs provided through SOC.

SOCs are awarded under the OPA's Renewable Energy Standard Offer Program (RESOP), launched in November 2006. The program's main mandate is to encourage the rapid expansion of renewable electricity generating capacity in Ontario by removing administrative obstacles and assuring stable and sufficient revenues for small, renewable energy projects. The high tariffs and long contract duration are intended to allow owners of small, renewable energy projects to recover the high capital investments and the significant administrative costs that such projects entail. The Ontario government does not subsidize the RESOP; rather, program costs are included in the wholesale rate for electricity and are therefore borne entirely by electricity consumers province-wide.

Among the 200+ renewable energy projects that have been awarded SOC since the RESOP was launched (OPA, 2007), there is one very distinctive project: the Exhibition Place Wind Turbine. Located on the shore of Lake Ontario near Toronto's downtown core, it is the largest wind turbine in an urban location in North America. The turbine is co-owned by a co-operative called WindShare and by Toronto Hydro Energy Services, the retail branch of the local electrical distribution company (Girvitz and Lipp, 2005). The turbine was actually built about 5 years prior to the launch of the RESOP, in the wake of deregulation of the electricity industry in Ontario. Initially, the electricity it produced was to be sold at a premium tariff to Toronto Hydro customers as an optional clean energy product. This arrangement did not last; the Ontario government capped electricity prices below the tariff at which Toronto Hydro was to sell the electricity, rendering the owners' investment recovery prospects hopeless. The launch of the RESOP provided new hope for the Exhibition Place turbine and other generators in a similar situation. According to the turbine's owners, access to the RESOP was not easy; when the program

was launched, SOC's were only to be awarded to new generators, not existing generators such as the Exhibition Place Turbine. After intense lobbying, the Exhibition Place turbine and a handful of other projects in a similar situation were eventually admitted to the RESOP and awarded SOC's.



At face value, the RESOP seems to be a success. In its first year, over 200 SOC's were awarded and are expected to add over 800 megawatts worth of renewable electricity generating capacity (OPA, 2007). However, none of the new projects signed to date are in urban locations and none are as small as the Exhibition Place turbine. It appears that the administrative and financial burden for gaining admission to RESOP is too great for small-scale, cooperative-owned renewable generation facilities (OSEA, 2007). Moreover, even when combined with all available provincial and federal renewable energy subsidies, the current tariffs are not high enough to make small-scale projects feasible; the tariffs are only likely to be sufficient for larger projects, closer to the 10 MWh cap, which can benefit from certain economies of scale. In its current state, the RESOP does not sufficiently facilitate admission and provide sufficient revenues for small, urban wind energy projects.

While there are no North American precedents, so-called Advanced Renewable Tariff (ART) programs similar to RESOP exist

in over a dozen European nations. Tariffs and rules for interconnecting with the distribution grid vary from country to country, reflecting different regulatory frameworks. Canadian provinces wishing to undertake a program similar to RESOP would have to adapt tariffs and interconnection rules to make such a program compatible with their regulatory framework. Provinces with a deregulated and decentralized electricity industry, similar to the one in Ontario, are likely to be able to draw more directly on Ontario's experience than those who continue to have highly regulated and centralized electricity industry. Beyond Ontario's experience, Canadian jurisdictions can draw from the European countries diverse experiences with ART programs. The leaders in Europe include Germany, Denmark, and Spain (Gipe, n.d.).

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3.6 Minneapolis: Stormwater Utility Fee Credits

The City of Minneapolis implemented a stormwater fee in 2005. Previously, both residential and non-residential property owners were assessed a monthly sewer fee calculated on the basis of their monthly water usage. The sewer fee covered the costs of both the sanitary sewer system and the stormwater drainage system. Since the introduction of the stormwater fee, the costs of sanitary sewage and stormwater drainage are accounted for separately – i.e., stormwater management is now a separate utility (City of Minneapolis, 2005a). For residential properties, stormwater fees are pre-calculated for various property tiers and types. In the case of non-residential properties, a fee is calculated for every individual lot. The calculation is based on a measurement of the lot's total impervious surface area. Stormwater fee revenues support the operating and capital expenses of the stormwater collection system, but a portion is also used for grants to property owners for stormwater mitigating retrofits.

Stormwater fees are complimented by a system of discounts designed to encourage both residential and non-residential property owners to reduce their impervious surface areas, thereby reducing their stormwater runoff. Owners can earn stormwater fee credits by implementing certain stormwater best management practices (BMPs) recognized by the City (Metropolitan Council, 2001). There are two general types of stormwater fee credits: (1) quality credits, aimed at homeowners; and (2) quantity credits, aimed at commercial property owners. Quality credits are intended to encourage the population at large to get involved in reducing stormwater runoff. Homeowners can lower their stormwater fee liability by as much as 50% by installing small scale BMPs that reduce the runoff from roofs, driveways, and other impervious surfaces. Quantity credits are offered to commercial property owners; they are intended to encourage installation of larger-scale and technically sophisticated BMPs. Quantity credits can reduce the stormwater fee liability by up to 50% if BMP improvements allow the property to handle a 10-year, 24-hour rainfall event, and up to 100% for handling a 100-year, 24-hour rainfall event (City of Minneapolis, 2005b).

>> The Minneapolis skyline



As it was implemented recently, the stormwater fee and credit system has had little time to make an impact on the reduction of stormwater runoff. Early data suggests that there have been a fair number of early adopters. As of June 2006, 350 BMPs had been installed on public and private properties, and 215 of those had qualified for stormwater fee credits (City of Minneapolis, 2007). Many observers believe the pace at which BMPs are being deployed is too slow. Some believe that current stormwater fees might be too low to encourage widespread deployment of BMPs. Moreover, because they are low, the fees are not raising sufficient funds for retrofit grants to properties, which could further speed up stormwater mitigation.

A number of cities in several US states have distinct stormwater utilities with a system of fees and credits. However, most of these systems focus on stormwater detention and retention, rather than on the quality of stormwater mitigation. With the exception of the City of Regina, which charges a separate, flat fee for stormwater, there are no cities in Canada using stormwater fees (Cameron et al., 1999). Regina's flat fee and lack of credits for improvements provides no incentive to reduce stormwater runoff. Weak federal and provincial regulations in Canada pertaining to stormwater management fail to compel cities to adopt more progressive stormwater management infrastructure. In the US, in contrast, it is believed that strict federal and state regulations are among the key factors that have pushed cities, including Minneapolis, to undertake stormwater management efforts.

3.7 San Francisco: TOD Policy Leveraging

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The Metropolitan Transportation Commission (MTC), an agency responsible for transportation planning and funding in nine counties in the San Francisco Bay Area, is using funding for transit infrastructure to leverage transit-oriented development (TOD). The MTC requires that municipalities make land use planning provisions consistent with the principles of TOD along proposed transit corridors. Funding for the new transit infrastructure is withheld until land use provisions are met along the entire planned transit corridor (MTC, 2005a).

The MTC uses a three-pronged approach to encourage TOD along new transit corridors. First, it determines an overall density threshold that development in a transit corridor must meet. The threshold depends directly on the planned capacity of the transit system – i.e., the higher the capacity, the higher the threshold. Second, the MTC gives municipalities grants for transit-supportive land use planning for the immediate area around transit nodes and for neighbourhoods within a half-mile radius of the nodes. Third, the MTC sets up “corridor working groups” that help coordinate the planning efforts of all the municipalities through which a planned transit corridor passes. The groups are made up of representatives from corridor municipalities and staff from local transit agencies, the MTC itself, and the Association of Bay Area Governments. The purpose of these groups is to negotiate the distribution of development densities around transit nodes in the planned corridor. Once all corridor municipalities have implemented transit station area plans, the MTC evaluates them to determine whether the desired overall density threshold has been met. If satisfied with the results, it releases regional discretionary funds to build the planned transit infrastructure. (MTC, 2005b)

The TOD leveraging policy was passed in 2005. The first station area plans devised under the new policy are still under development (for an example, see City Milpitas, 2007). As such, it is too early to evaluate the actual policy's



success in stimulating TOD and achieving any smart growth goals. A policy review in July 2006 found that, overall, there is willingness among local municipalities to comply with the MTC's condition for transit investment (Nelson/Nygard Consulting Associates, 2006). The station area plan grants were mentioned as a particularly successful component of the policy, having a positive impact on planning around future transit stations. The corridor working groups component of the policy, on the other hand, is not considered highly successful. The intention was to stimulate vertical and horizontal collaboration between local government bodies and transit agencies. While vertical collaboration has so far been good, horizontal collaboration has been limited. Municipalities have questioned the usefulness of negotiating the distribution of development densities and have instead called for simple, non-negotiable average densities to be assigned to each transit station area. Some observers have noted that some municipalities have misinterpreted the idea of density thresholds, treating them as targets to be met exactly or, worse yet, as ceilings; the intention was that the thresholds be treated as lower, not upper, bounds and that municipalities strive to exceed them wherever possible.

There are regional transportation agencies in Canada that, like the MTC, handle inter-municipal public transit investments. Examples include Metro Vancouver's TransLink and the Montreal Metropolitan Community's Agence Métropolitaine de Transport (AMT). TransLink actually does have the power to withhold funds for transit extensions to new developments that do not conform to regional growth objectives. In practice, however, TransLink has failed to exercise this power, having funded transit facilities for developments that violated regional growth objectives (Tomalty, 2004). Montreal's AMT supports TOD in principle but has no policy with regard to using transit investments to leverage it. Elsewhere in Canada, where regional transit agencies do not exist, transit investments are made directly by the different tiers of government. Provincial grants to municipalities for

transportation purposes, generated through fuel taxes and other revenues, seldom have conditions related to planning objectives attached to them, as the MTC does. The federal government's Gas Tax Fund, which is being used to help finance infrastructure across the country, does require that recipient municipalities prepare an Integrated Community Sustainability Plan (ICSP), defined as: "A long-term plan, developed in consultation with community members that provides direction for the community to realize sustainability objectives it has for the environmental, cultural, social and economic dimensions of its identity." Infrastructure Canada has developed a seven stage process for elaborating ICSPs. To date numerous municipalities across the country have embarked on sustainability plans, including Whistler, BC, the City of Airdrie, AB and the City of Hamilton, ON.

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3.8 Edmonton: Fuel Tax Transfer

In 1999, the mayors of Calgary and Edmonton both approached the Government of Alberta with concerns about funding public transit capital projects. Later the same year, Alberta Premier Ralph Klein responded by setting up the Premier's Task Force on Infrastructure, charged with finding a solution to the municipal infrastructure funding gap (Transportation Association of Canada, 2002). The Task Force, which included both mayors, representatives of municipal associations, and personnel from the provincial ministries of transportation and of municipal affairs, recommended that a fixed portion of the provincial gasoline tax collected on the territories of the cities of Calgary and Edmonton be transferred to a common fund, and that monies in that fund be transferred to the cities via a project grant application process (Government of Alberta, 2005).

The City Transportation Fund (CTF) was set up in 2000 to help major urban centres in Alberta finance public transit capital projects. Five cents of every litre of gasoline and diesel fuel sold within territories of the cities of Calgary and Edmonton are transferred to the fund. CTF monies are not transferred directly to the cities; rather, they must apply to the CTF for grants for specific projects. Highways, major arterial roads, and public transit projects are eligible for funding from the CTF (Government of Alberta, 2005).

In 2002, the City of Edmonton approved a 0.6 km extension of its LRT line, the first phase of a major southward extension laid out in the City's 1999 Transportation Master Plan (City of Edmonton, 2007b). The underground extension cost \$108 million, of which \$76 million came from the CTF. Edmonton has now undertaken subsequent phases of the southward expansions of the LRT but is no longer using the CTF as the primary funding source. Instead, the current 7.2 km extension will be funded primarily through federal fuel tax transfers. Under the federal government's 2005 New Deal for Cities and Communities (NDCC), Edmonton, like other cities across Canada, is now entitled to a transfer from

the government proportional to its census population. The City of Edmonton has decided to dedicate all funds from the NDCC to public transit projects, freeing up CTF funds for highways and other road projects (City of Edmonton, 2007a).

The CTF can be regarded as a contributor to the attainment of smart growth goals in Edmonton by providing funding for the extension of Edmonton's LRT system. The CTF's positive aspects are that it is a predictable yet flexible funding source – i.e., it provides a stable, annual pool of funds that cities can allocate to projects of their choice. The Fund has been relatively easy to set up and manage as it uses an existing tax regime. By drawing funds directly from fuel tax, the CTF links automobile use to investment in transportation infrastructure (Vander Ploeg, 2006).

More can be done to ensure that the CTF contributes to smart growth in Edmonton. There are administrative challenges to allocating funds for smart growth supporting initiatives given that, currently, five different departments manage CTF monies. There are also political challenges: as of yet, there is no strong policy commitment to better integrate transportation investments with land use planning and the attainment of environmental objectives. A possible future challenge for the management of CTF grants could be instability or discontinuation of federal funding for infrastructure, upon which Edmonton's transit projects are currently very dependent.

Currently, only three provinces share provincial fuel tax revenues with municipalities: Alberta, British Columbia, and Quebec. In contrast to Alberta, Quebec and BC have actually increased fuel tax within the boundaries of their largest urban agglomerations. In British Columbia, fuel sold on Metro Vancouver territory is taxed 12¢ a litre by TransLink, the agglomeration's transportation authority. In turn provincial fuel tax is reduced to only 1.75¢ in Metro Vancouver from 7.75¢ per litre in the rest of

the province. TransLink uses the revenues to fund both transit and road capital projects and operating costs. The Government of Quebec has taken a markedly similar approach: on the territory of the Montreal Metropolitan Community (MMC), there is a 1.5¢ per litre fuel tax surcharge, on top of provincial fuel tax. Fuel surcharge revenues are pooled with revenues from an annual \$30 surcharge on vehicle registration on MMC territory and are transferred directly to the Agence Metropolitaine de Transport (AMT), the MMC's regional public transportation authority. The AMT, in turn, spends a portion of these revenues on its own capital projects and transfers the rest to municipal transit agencies.

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3.9 Portland: Tax Increment Financing

Tax increment financing (TIF) is the primary method by which the City of Portland, Oregon finances urban renewal projects. The types of projects financed with TIF include: (1) redevelopment projects, such as projects near light rail that combine retail and residential components; (2) streetscape improvements, including new lighting, trees, sidewalks, pedestrian amenities, etc.; (3) transportation enhancements, including light rail, streetcar, intersection improvements, etc.; and (4) parks and open spaces. At the onset of a renewal project, the Portland Development Corporation (PDC) – the municipal agency responsible for renewal projects – defines an Urban Renewal Area (URA) in which capital investments will be made (PDC, n.d.). The current property tax revenue in the URA is set a baseline. As tax revenues from the URA increase, the loan taken to finance the public investment area is paid down. Once loans are repaid, all property tax collected in the URA goes directly to the City's general revenue fund, ultimately yielding an increased property tax base. (PDC, 2007)

The City of Portland has been using TIF since the creation of the PDC in 1958. A year before voters approved the creation of the PDC, the Mayor of Portland, Terry Schrunk, successfully lobbied the state legislature to enact a set of laws that would give Portland's municipal planning agencies new tools for stimulating investment and local economic activity; among these was the ability to use TIF. The PDC's first major project was the South Auditorium Renewal Project. Two thirds of the financing for the project came from the federal government and the remaining third was generated through tax increments from properties around the project's centerpiece, the Civic Auditorium.

Despite the initial enthusiasm for using TIF, the technique failed to raise sufficient revenues to repay loans for a number of renewal projects and, as a result, the PDC switched its focus primarily to federal grants (Johnson and Tashman, 2002). After a series of failed and unpopular renewal projects

conducted by the PDC in the 1960s and 1970s, Portland undertook reforms to the way renewal projects were administered. These reforms were based on three pillars: (1) mixed-use planning; (2) focus on business development; and (3) inclusion of community stakeholders in the planning and implementation process (Wollner et al., 2005). In the 1980s, when federal funding for urban renewal projects dried up, the PDC returned to the practice of TIF and, thanks to the earlier reforms, successfully implemented a number of renewal projects. In the 1990s, state legislation capping property tax increases almost derailed the PDC's ability to use TIF. Fortunately, the state made amendments that would allow TIF to continue as the primary financing method for successful urban renewal projects, such as the Portland Streetcar project.



Overall, the use of TIF has helped Portland carry out projects compatible with the objectives of smart growth. Portland's TIF-supported revitalization projects have led to increased densities and mix of land uses in several neighbourhoods. TIF was also crucial to the financing of Portland's successful streetcar and light rail projects, which have led to improved transit ridership and have been coupled with transit-oriented development (TOD). Nonetheless, there are important challenges to the ongoing use of TIF. One problem is that rising property values, leveraged capital by renewal project investments, have put pressure on the supply of affordable housing (Beurger, 2007). Another problem is that TIF has arguably been used to fund capital projects that do not necessarily benefit a wide cross-section

of the local population. Some critics also say that citizens have had limited influence on the implementation of TIF-driven renewal projects.

TIF is allowed in all states except Arizona and is used by numerous cities across the US. In Canada, only Alberta and Manitoba have authorized the use of TIF. The City of Calgary, authorized to use TIF in 2005, is presently using the mechanism to finance a revitalization project in its Rivers District (City of Calgary, 2005). Meanwhile, Winnipeg has yet to develop a TIF program even though the Manitoba government enabled its use in 2002. Ontario is currently considering authorizing the use of TIF, which has been proposed as a potential mechanism for financing the revitalization of the Toronto waterfront.

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>> A streetcar passes some condominiums in Toronto, Ontario



3.10 Minneapolis-St. Paul: Tax Base Sharing

In 1971, after the State of Minnesota passed the Fiscal Disparities Act, Minneapolis-St. Paul became the first metropolitan area in the US to implement a regional tax-base sharing program. Tax-base sharing is grounded in the idea that communities experiencing growth should share the benefits with other communities in the same urban region. The

>> Tax-base sharing is grounded in the idea that communities experiencing growth should share the benefits with other communities in the same urban region

competition among municipalities; (2) improve the distribution of commercial and industrial tax revenues by reducing local inequalities; (3) and support a regional approach to planning and development. According to Met Council, the basic justification for the tax-base sharing program is that all municipalities in the region should benefit from new commercial or industrial growth because such growth is often the result of public investments made by the regional and state governments (MSMPC, 2007).

The equalization strategy redistributes 40% of the total increase in the commercial and industrial property tax-base over that recorded in 1971, when the Fiscal Disparities

Fiscal Disparities program requires that municipalities in the Minneapolis-St. Paul region contribute a portion of their commercial and industrial tax growth to a regional pool. Funds in the pool are redistributed according to a fairly complex equalization formula (Orlfield, 1997).

The main goals of the Fiscal Disparities program are: (1) to reduce

>> Minneapolis, Minnesota



program started (Orfield, 1997; Katz, 2002). Commercial and industrial property tax-base growth includes both that resulting from new construction or upgrades as well as that resulting from inflationary increases. Municipalities in the region that have a below-average market value per capita get a greater share of regional funding than their share of the region's population (Hinze and Baker, 2005). This redistribution results in a partial equalization of the fiscal imbalance between different municipalities in the seven-county region (Orfield, 2002). A 2002 in-depth study of the Fiscal Disparities program estimated that, in the absence of the program, the per capita commercial and industrial tax-base of the wealthiest municipality in the region would be 21 times that of the poorest municipality; regional tax-base sharing reduces this staggering ratio to roughly 4 to 1. In 1999, of the 187 municipalities in the region, 50 were net donors while 137 were net recipients. The donors are generally wealthy suburban municipalities such as Minnetonka, Eden Prairie, Edina, Plymouth, and Bloomington (home of the Mall of America, the largest shopping centre in the US) (Turnbull, 2002).

Although the tax-base sharing policy was not designed to drive smart growth per se, it arguably encourages certain aspects of

smart growth in the Minneapolis-St. Paul region. The program reduces the incentive for outlying suburban municipalities to lure major industrial and commercial development to their territories. This in turn reduces the dispersion of places of employment throughout the urban periphery and, consequently, avoids increases in automobile use. Furthermore, the reduction of fiscal imbalance between municipalities may also limit residential sprawl. In the absence of tax-base sharing, if an inner suburbs' commercial and industrial tax-base were to deteriorate, it would be forced to raise residential property taxes or to scale back services; a rise in residential taxes and decline in services would drive homeowners out to outlying suburbs with lower residential property taxes and better services.

Despite its success in reducing inter-municipal competition and ostensibly counteracting some of the factors that drive employment dispersion and residential sprawl, more could be done to make tax-base sharing a vehicle for smart growth. The tax-base sharing program is intended to facilitate a regional approach to planning, yet monies from the regional tax-base pool are not used for regional infrastructure projects; individual municipalities spend their regional tax-base transfers as they best see fit. Beyond weak inter-municipal coordination, the lack of integration between the tax-base sharing program and regional policymaking and the region's weak growth boundary limit the capacity of tax-base sharing to prevent sprawl and drive smart growth.

Only one other jurisdiction in the US has long-standing experience with tax-base sharing – the City of Charlottesville and the surrounding Albemarle County in Virginia. The purpose of the tax-base sharing policy in this region is, much like in Minneapolis-St. Paul's case, is to reduce competition between municipalities. However, in this case it was also devised to avoid costs of legal battles for land annexation that future development

would most likely entail. A key difference between the tax-base sharing programs in Minneapolis-St. Paul and in Charlottesville-Albemarle is that the former encompasses only the commercial and industrial tax-base whereas the latter encompasses all property taxes. (Turnbull, 2002)

In Canada, Quebec is the only province in which there has been some experience with inter-municipal property tax-base sharing. The Montreal Metropolitan Community (MMC) is using a tax-base sharing scheme to fund a program for the protection of the city's riverbanks. The City of Montreal has proposed that some of the future transit projects proposed in its 2007 Transportation Plan could be funded through a regional tax-base sharing scheme.

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3.11 Montreal: Vehicle Registration Surcharge

At the beginning of the 1990s, the Government of Quebec undertook major reforms to municipal finance, redefining how the fiscal burdens were to be shared between itself and municipalities. In the process, it set up *Fonds des contributions des automobilistes au transport en commun* (Funds for Motorists' Contribution to Public Transportation) for the larger urban regions in the province. As of January 1, 1992, all owners of a passenger vehicle registered to an address within one of the Census Metropolitan Areas (CMAs) in Quebec are required to pay an annual \$30 surcharge on top of the regular annual vehicle registration fee. On January 1st, 2000, the rules governing the fund were changed slightly, requiring that the surcharge only be applied to vehicles registered in municipalities that are served by public transit. Motorists in the Montreal region also contribute to the *Fond des contributions des automobilistes* through a \$0.015 per litre surcharge on fuel (MTQ, 2007).

There are seven regions which have a *Fond des contributions des automobilistes*: Montreal, Quebec, Gatineau, Trois-Rivières, Saguenay, Sherbrooke, and Saint-Jérôme (SAAQ, 2002). The fund operates somewhat differently in the Montreal Metropolitan Community (MMC) than in the other regions. The other regions, being much smaller in terms of population and area, have a single public transportation provider that directly receives all the money collected through the *Fond des contributions des automobilistes*. The MMC, in contrast, has a regional public transportation authority, the *Agence Métropolitaine de Transport* (AMT) that uses about half the money from the fund to finance its own operations and redistributes the remainder to municipal transit authorities within the MMC, including the *Société de transport de Montréal* (STM), two large suburban transit authorities (STL and RTL), and eleven smaller transit providers serving the periphery. In principle, the funds are allocated to transit lines that operate at the 'metropolitan scale' – i.e. that are inter-municipal and have a very long range. This

includes the AMT's own commuter train lines, the STM's Métro (subway), and major bus routes administered by any of the municipal transit authorities.

The AMT's budget for 2006 was \$245.5 million. The revenues from the vehicle registration surcharge were \$50.2 million (20.4%) and those from a fuel surtax were

\$50.4 million (20.5%). Thus, a total of \$100.6 million or 41.0% of the AMT's budget comes from the *Fond des contributions des automobilistes*. For the 2007 fiscal year, the AMT plans to redistribute the money collected from motorists in the following way: (1) approximately 44% directly to the Métro, a

>> In Canada, there are very few jurisdictions outside of Quebec that obligate motorists to contribute directly to public transit.

subsidy equalling \$0.20 per passenger); (2) approximately 24% to major bus lines, a subsidy equalling \$0.50 per passenger, with an extra \$0.50 for bus routes that feed into the commuter train system, plus a subsidy for students and senior citizen's discounts; (3) approximately 10% to commuter train service; (4) about 14% for metropolitan bus terminals, dedicated bus lanes, and paratransit. The remaining 8% is reserved for other expenses.

While motorists' contributions constitute such an important share of the AMT budget, they make up a much smaller share of the total cost of providing public transportation in the MMC. In 2001, motorists' contributions covered 8.2% of public transit expenditures (UDI-ICSC-QBOMA, 2002). Municipalities and various lobby groups have been arguing for quite some time for an increase to the registration surcharge, which has remained fixed at \$30 since its inception 15 years ago.

The increase is believed to be necessary in order to help finance capital projects, including infrastructure renewal and extensions, which are expected to take place in the coming years.



The AMT's investments, using monies from the *Fond des contributions des automobilistes*, appear to have some impact on the attainment of smart growth objectives. Transit ridership in the MMC is generally on the rise. Since its inception in the mid-1990s, the AMT has successfully set up three new commuter train lines that have been enjoying high ridership. However, the train lines offer mostly peak hour service and have been coupled with park and ride facilities or mostly car-oriented residential development. In terms of smart growth, the challenge for the AMT will be to couple its capital investments to more transit-supportive development. This is likely to require stronger integration of AMT's own regional transportation planning with regional land-use planning at the Montreal Metropolitan Community level as well as at the municipal level.

In Canada, there are very few jurisdictions outside of Quebec that obligate motorists to contribute directly to public transit. No

jurisdiction outside of Quebec accesses a vehicle registration surcharge to fund public transit (Transport Canada, 2005). Earlier this year, however, Toronto Mayor David Miller proposed a \$60 annual passenger vehicle registration surcharge to help cover the city's expected budget shortfall; Toronto's City Council reject the proposal (National Post, 2007).

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3.12 Philadelphia: Commuter Tax

Commuter taxes exist in some form in 13 states. In most of these cases, the state tax legislation enables counties or municipalities to levy a small payroll income tax (PIT) on employees rather than residents. Most commuter taxes are in the range of 0.25% to 2% of earned income. Notable exceptions include Chicago, which charges employers with over 50 employees a flat fee - \$4 per employee per month 'Employers' Expense Tax'. Another notable exception are larger cities in Pennsylvania, namely Philadelphia, Pittsburgh, and Scranton, which are free to levy PIT higher than the 1% ceiling imposed on other jurisdictions by state tax legislation (NTUF, 2003). In Philadelphia, for the current fiscal year, non-residents are liable for a 3.76% wage tax (as compared to 4.26% for residents) (City of Philadelphia, 2007).

In Philadelphia and elsewhere, commuter taxes have been fairly controversial. The main criticism of commuter taxes is that they constitute 'taxation without representation', in the sense that commuters do not elect the officials who decide how the commuter tax revenues are spent. Another problem is that commuter taxes are not tied directly to the use of infrastructure. A commuter's impact on infrastructure depends, for instance, on what mode of transportation s/he uses to commute; a car commuter and a bicycle commuter have very different impacts on infrastructure and yet would be liable for the same level of taxation. For this reason, critics of commuter taxes argue that charges for infrastructure use, such as road tolls and transit fares, are a more equitable way of taxing commuters.

Detractors of commuter taxes claim that they encourage employers to migrate to areas without commuter taxes. The National Taxpayers Union Foundation (NTUF) (2003) claims that Philadelphia's commuter tax has been detrimental to the central city's economy by encouraging job growth in the periphery. Proponent's counter that the "elasticity" – the ability to absorb additional tax without adverse effects – of income taxes is greater than

that of other types of tax. Hikes in property tax, claim proponents, would be more likely to drive residents and employers to the suburbs. Another alternative, a municipal sales tax, could also be detrimental by driving retail and services out to suburban municipalities with no sales tax.

In principal, commuter taxes are compatible with smart growth because, in principle, they mitigate factors that drive sprawl. High property taxes in central cities are a factor that drives both residents and business to less taxed suburban locations. Commuter taxes can unburden property tax payers in the central city from footing the bill for infrastructure and services used by commuters. Lower property taxes in the central city can not only limit sprawl but might even reverse it by attracting new residents and businesses. However, in Philadelphia's case, there is no conclusive evidence confirming the commuter tax's sprawl-mitigating effect.

The challenge for Philadelphia and other cities that collect commuter tax is to transparently spend commuter tax revenues on infrastructure that clearly benefits commuters but also reduces their impacts on the central city. Channelling commuter tax revenues directly to transit and cycling infrastructure as well as parks and public spaces used by commuters would be an example.

In Canada, there are no examples of commuter taxes, or any form of municipal PIT for that matter. Yet, the suburban "free rider" effect is an important concern in the Canadian context. The municipal mergers that occurred in Ontario and Quebec in the late 1990s and early 2000s are a case in point; they were partly justified on grounds of better sharing tax revenues between central cities and suburbs. Commuter taxes could be an option worth considering for central cities with high concentrations of commuter jobs. Kitchen and Slack (2003) suggest that existing federal and provincial income tax collecting mechanisms could be used to collect municipal PITs with only minor modifications.

3.12 Philadelphia: Commuter Tax continued

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>> Philadelphia, Pennsylvania



3.13 Denver: Local Option Sales Tax and Tax-exempt Tax Revenue Bonds

In 2004, there were a total of 27 states using LOSTs to pay for transportation infrastructure projects. Of these, nine were using them only to pay for highway improvements, 12 for both highway and public transit improvements, and five for public transit improvements only. Cities that have adopted LOSTs exclusively for public transit improvements include Aspen and Denver in Colorado; Kansas City in Missouri; Canton and Franklin County in Ohio; Grapevine in Texas; and Finley, Spokane, Everett, King County (Seattle), and Selah City in Washington (NCHRP, 2006).

For the construction of new public transit infrastructure, many American transit agencies have the ability to issue public, tax-exempt bonds, allowing them to raise up-front capital. In the case of tax-exempt bonds, the income earned by the bondholder through interest is exempt from federal and state income taxes. Consequently, the bonds can have a lower interest rate than the prevailing market rate, allowing transit agencies to reduce the cost of borrowing.

The principal and interest can be repaid with revenue from a specifically designated local option tax, such as a gasoline tax, property tax, or a sales tax. Special legislation may be required to facilitate disbursement of tax revenues from the city or state to the bond issuer, in this case a transit authority.

A recent example of the use of a transit tax-revenue bond backed by LOST for financing a public transit projects is in the Denver, Colorado region. The Regional Transportation District (RTD), the regional transit authority serving eight counties in the Denver-Aurora-Boulder region, is using a transit tax-revenue bond to be reimbursed through a LOST to partly finance a massive, 12-year expansion project, dubbed *FasTracks*. The project aims to add 119 miles (192 km) of light rail and commuter rail, 21,000 new parking spaces at rail and bus stations, and to add numerous new bus lines throughout the district (RTD, 2006). The RTD proposed that about 50% of the project's cost, projected at \$4.7 billion, be recovered through a 0.4% sales tax increase within the eight-county district. The district

already had a 0.6% LOST that had been implemented to finance light rail projects in the late 1990s; the additional tax to fund FasTracks brought the total LOST dedicated to the RTD to 1.0%. Despite the existing 0.6% LOST, plus other unrelated LOSTs in some of the counties served by the RTD, residents voted 58% in favour of the FasTracks ballot initiative in November 2004 (NCHRP, 2006). The LOST was implemented in January 2005 and tax-exempt bonds were issued shortly thereafter.

LOSTs are seen as an efficient, transparent, and stable alternative to property taxes for raising funds for major capital projects. They are efficient in that they have the potential to raise large amounts of money in a short time. They are transparent in the sense that they are specific to one purpose – i.e., it is clear what the money is being spent on. Moreover, in most cases, they are directly approved by voters; voters not only give assent to a new tax, but they also in effect give assent to a particular capital project. LOSTs are stable in that they are not susceptible to the whims of politicians. For example, the 1.0% LOST dedicated to the RTD will remain dedicated to the RTD until its planned expiry date – i.e., politicians cannot alter the tax, and they cannot spend the revenues elsewhere.

On their own, LOSTs do not inherently encourage smart growth. Unlike property taxes, a general sales tax is unlikely to have much bearing on the spatial dimensions of urban growth. Nevertheless, this combination of mechanisms can be used to finance smart growth-related infrastructure projects, such as public transit projects. In the case of FasTracks, the LOST-backed transit tax bond mechanism is unquestionably a very successful financing tool. However, whether the funds raised through the LOST have an impact in terms of smart growth depends on whether the FasTracks program is integrated with transit-supportive land-use planning in the coming years.

Currently, there is little scope for implementing a FasTracks-like financing model in Canada. Firstly, Canadian transit agencies generally do not have the authority to issue tax-backed securities similar to the

tax-exempt bonds issued by RTD. Secondly, it would be difficult to implement a LOST anywhere in Canada since local governments in this country lack the power to collect sales taxes; only the provincial and federal governments have this power. There are no examples of general sales taxes being raised within a particular local jurisdiction in order to pay for a major capital project. Provincial governments have legislative power to allow regional or municipal LOSTs.

Another issue related to transferring the LOST concept to Canada is that there is no mechanism for regular, local referenda, similar to the 'ballot initiative' through which Denver's LOSTs were approved.

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3.14 New Jersey: Grant Anticipation Revenue Vehicles (GARVEE)

Grant Anticipation Revenue Vehicles (GARVEEs) are a type of security used the US to finance transportation projects. In the US, GARVEEs were made possible through two key pieces of federal legislation: (1) the Transportation Equity Act for the 21st Century (TEA-21), enacted in June 1998; and (2) the Surface Transportation Uniform Relocation and Rehabilitation Act (STURRA)

>> Issuing GARVEE securities such as bonds and Certificate of Participation (COPs) makes it possible to raise up-front capital for transit infrastructure and achieve results at a much faster rate than traditional pay-as-you-go mechanisms.

of 1982. TEA-21 guaranteed a minimum amount of federal funding for transit between 1998 and 2003 and implemented "firewall" provisions, which prevent these funds from being re-allocated to other domestic purposes (Parker 2002). TEA-21 has several categories of transit funding: formula funds for urban and non-urban areas are fixed amounts, allocated according to population, density and transit infrastructure; funding for major capital investment and new starts projects remains discretionary, and projects compete for federal funding according to specific criteria. In the case of a new starts project, the Federal Transit Administration (FTA) can enter into a Full Funding Grant Agreement (FFGA) with a transit system, in which the FTA commits an amount to be disbursed over several years (USDOT, 2000). In combination with the STURRA, which deemed interest

costs eligible for reimbursements with federal funding programs, TEA-21 has made it possible for American transit systems to issue securities backed by anticipated federal funding. Issuing GARVEE securities such as bonds and Certificate of Participation (COPs) makes it possible to raise up-front capital for transit infrastructure and achieve results at a much faster rate than traditional pay-as-you-go mechanisms.

In 1999, NJ Transit became the first American transit system to issue securities backed solely with anticipated federal funds. NJ Transit is a state-wide corporation that operates regional and municipal transit, serving a population of 8.7 million and connecting major urban areas of Jersey City, Philadelphia, and New York. Between 1992 and 2000, NJ Transit ridership increased 36%, and a further 34% increase was projected by the year 2005. Roadway congestion was particularly problematic around Hudson-river crossings to Manhattan (NJ Transit; Warsh, 2000). To accelerate service improvements, NJ Transit issued \$151.5 million in COPs backed by anticipated federal funds. The funds were used to finance the purchase of 500 busses. In 2000, a second round of COPs worth \$234 million was used to purchase double decker light-rail trains (USDOT, 2000; Warsh, 2000).

Also in 2000, the FTA executed a Full Funding Grant Agreement with NJ Transit to support the 5.1-mile Hudson-Bergen Light Rail Transit MOS-2 extension. The extension links the communities of North-Bergen and Bayonne with the high-density urban centres of Hoboken and Jersey City and connects with PATH (subway connecting to New York City transit), ferries and commuter rail lines. The extension was estimated to cost a total of \$1.2 billion, including borrowing costs. The federal government allocated \$500 million of discretionary funds to the project under the New Starts section of TEA-21, to be paid in instalments between 2003 and 2008 (Parker, 2002). NJ Transit issued \$452.2 million in COPs backed by anticipated funds, allowing

>> The New Jersey skyline



construction of the light rail extension to begin three years prior to the receipt of the first instalment of the federal financing. A single design-build-maintain-operate contract was used to minimize cost and construction time (Parker, 2002). The COPs issued by NJ Transit were considered secure by FitchRatings because of the low variability in federal funding and the fact that funds could not be re-allocated for a purpose other than transit since the enactment of TEA-21 (Parker, 2002).

The first seven stations of the HBLRT extension became operable in November 2003 and the project was completed in February 2006 (NJ Transit, 2006).

The Hudson-Bergen LRT has contributed to the redevelopment of abandoned industrial property in adjacent areas to mixed-use transit-oriented precincts. Through their planning, development control and investment efforts, the municipal governments of both Jersey City and Hoboken actively supported the conversion of underused land in the corridor to high-density and mixed-use development (Gorewitz and Ohland, 2006). The 9th street station in Hoboken, a derelict industrial neighborhood is considered particularly successful in terms of smart growth: between 2000 and 2005, 1125 new residential units were planned within a half-mile of the station. Commercial space, bike paths, playgrounds, restaurants, entertainment centres, a community

centre, arts space and swimming pool are also included in the various developments surrounding the station (Wells and Roberts, 2006). The State of New Jersey received \$500,000 in TEA-21 funds towards the "Transit-Friendly Communities for New Jersey" program, which facilitated smart growth throughout the state with workshops and technical assistance (USDOT, 1999).

Prior to TEA-21, fluctuations in federal transit investment made it difficult to plan an efficient schedule of investment for multi-year projects, or to issue reliable securities. It appears that stable and reliable federal funds have leveraged increased levels of state and local matching funds for transit (USDOT, 2000; Parker, 2002). Nonetheless, variations in the annual allocation of discretionary federal funds to the Full Funding Grant Agreements could be a challenge for borrowing using GARVEEs in the future.

Along with NJ Transit, nine Californian transit systems have issued securities backed with anticipated federal funds, while a total of 155 New Starts fixed-guideway projects have received full or partial funding under TEA-21 (Parker, 2002). In 2003, The FWHA re-authorized TEA-21 under the name SAFETEA-LU in order to finance surface transportation between 2005 and 2009 (USDOT, 2005). In Canada, Infrastructure Canada transfers gas-tax funds to provincial governments through multi-year agreements, on a per-capita basis. Like the TEA-21 funding formula, this provides a predictable source of funding that could theoretically be used to back securities such as bonds or COPs. However, the public transit funds are allocated to the provinces on an annual basis, which considerably reduces predictability and therefore does not favour the use of such a mechanism (Infrastructure Canada, 2007). To date, a Canadian transportation agency has yet to directly issue bonds, backed with anticipated federal funds or otherwise, to accelerate the construction of transit infrastructure.

3.14 New Jersey: Grant Anticipation Revenue Vehicles (GARVEE) continued

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Hudson-Bergen Light Rail line



Source: Center for Neighborhood Technology

4. Conclusions



>> This section offers some conclusions on the potential of the 15 tools surveyed to raise

money for infrastructure, achieve smart growth outcomes, and be replicated across Canada.

4.1 Infrastructure Financing Potential

The tools with the highest potential for raising money for infrastructure are those that provide stable and predictable revenues that are exclusively dedicated to paying for infrastructure. The Alberta fuel tax transfer program best fits this description: fuel tax is a stable and predictable revenue stream and monies from the fuel tax transfer are exclusively spent on transportation infrastructure. The Ontario standard offer contract (SOC) also fits this description: it provides a stable and predictable revenue stream for small renewable power infrastructure projects, guaranteeing cost recovery. Development charges such as density gradient and sectoral DCCs and transportation impact fees are also predictable revenue sources dedicated strictly to paying for development-related infrastructure.

Two of the tools examined in this report demonstrate a very high potential as special purpose revenue streams tied to a specific, major infrastructure project. The first tool, Tax Increment Financing (TIF), can potentially provide complete cost recovery for a major urban infrastructure project. The effects of certain types of infrastructure projects, such

as light rail, on property values are highly predictable, making TIF very likely to succeed. Case in point, the high costs of the street car and light rail projects in Portland were largely recovered through TIF. The second tool, Local Option Sales Tax (LOST), also has very high potential to recover large portions of major infrastructure investments. Being a sales tax, it is by nature a stable and predictable revenue stream and can be used with very high confidence.

The tools with a much lower potential are those that are not exclusively dedicated to raising capital for infrastructure. Several of the examined tools fit this description. Tools related to property taxes, such as Land Value Taxation (LVT) and tax base sharing, do not strictly provide funding solely for infrastructure; they are general funding tools and infrastructure is one of many spending targets. Vancouver's TransLink parking site tax and Montreal's AMT vehicle registration surcharge have a narrower purpose than property taxes but entail the same problem: neither is used exclusively to pay for infrastructure. In fact, most monies generated with these tools are used for covering public transit operating costs.

4.2 Smart Growth Potential

The 15 financing tools reviewed in this study fall into two general categories: tools that inherently encourage smart growth by virtue of how revenue is raised and those that encourage smart growth by virtue of the way in which the revenue raised is spent. In the former case, the application of the financing tool itself, and not merely the infrastructure it funds, has the potential to yield smart growth outcomes. Tools that inherently drive smart growth do so in three broad ways: (1) by linking charges to the use of infrastructure; (2) by diminishing the fiscal disparities between different parts of an urban region; (3) by taxing inefficient land uses. For the second group of mechanisms, smart growth outcomes depend entirely on how revenues raised by the mechanism are spent. In these cases, coordination between infrastructure investment and land use planning is of key importance. Some tools have the potential to work in both ways, i.e., inherently and through spending decisions.

Tools linked to infrastructure use

By linking charge levels to infrastructure use, financing mechanisms can encourage more efficient land use and infrastructure investment decisions. Sector and gradient based development cost charges (DCCs) in Canada and transportation impact fees (IFs) in the US are essentially infrastructure user fees that can yield smart growth outcomes. Sector-based DCCs, such as those used in Kelowna, and transportation IFs, such as those used in Orlando, both discount locations closer to the urban core while burdening locations in the periphery more heavily. This reflects the fact that central locations are generally well-served by existing infrastructure and little new infrastructure needs to be added to accommodate new development. The result is that the DCCs and transportation IFs encourage infill development, a desirable outcome for smart growth. The infrastructure charges in these cities are also sensitive to density levels, i.e., the development costs per unit diminish as the number of units per area rises. Consequently, they inherently encourage densification, another desirable outcome for smart growth.

The stormwater fee case study is also an example of a financial mechanism linked to infrastructure use. In this case, the mechanism is essentially charging property owners for the burden their property puts on stormwater collection infrastructure. Stormwater fees are calculated in terms of impervious surface area on a property. This in itself creates a structural incentive for reducing impervious surface area and thus reducing stormwater runoff. In Minneapolis, stormwater fees are linked to a system of discounts for the installation of infrastructure that manages stormwater and mitigates runoff. The discounts create a further incentive for property owners to implement stormwater mitigating infrastructure. In this way, the stormwater fee and credit system encourages the deployment of green infrastructure, which is desirable from a smart growth perspective, regardless of how revenues collected through the system are spent.



The use of fuel taxes to fund transportation infrastructure projects is another example of linking charges to the use of infrastructure with a potential for driving smart growth. It is well known that automobile use is sensitive to rises in fuel price. High fuel prices in Europe, due to high levels of fuel tax, are believed to be a key factor limiting Europeans' auto use in favour of transportation alternatives. High fuel prices are known to have the same effect in North America; spikes in fuel price in recent years have resulted in surges in public transit use. Nonetheless, it appears that the fuel

price increase needs to be quite significant to effect a reduction in car use. Edmonton and Calgary's City Transportation Fund (CTF) are unlikely to be efficacious in this regard because they do not entail a rise in fuel tax; the CTF is funded from a portion of the existing provincial fuel tax. In contrast, the fuel taxes collected by Vancouver's TransLink and Montréal's AMT arguably have greater scope for being a disincentive to driving because they entail a surcharge on top of the provincial and federal fuel taxes, increasing the retail price of fuel by 6¢ per litre and 1.5¢ per litre respectively. Still, these are very small premiums compared to fuel taxes in Europe. They are probably not a sufficient disincentive to auto use and will not put a brake on car-oriented development. Only a higher level of fuel taxation would intrinsically generate smart growth outcomes, such as increased use of public transit and non-motorized transportation and, ultimately, more compact growth.

Tools Mitigating Inter-municipal Differences

The two mechanisms that serve to mitigate inter-municipal fiscal disparities, tax-base sharing and the commuter tax, are inherent promoters of smart growth. Tax base sharing redistributes commercial and industrial property tax gains from certain parts of the agglomeration to less fortunate parts. This dramatically curtails the tax revenue disparity between parts of the agglomeration and allows all parts to maintain a fairly consistent balance of services to taxation. The commuter tax, on the other hand, is intended to alleviate the tax burden on residents and businesses in parts of an agglomeration (typically the central city) that receive a great deal of commuters but have a weak residential tax base. Much like municipalities that receive equalization payments under a tax-base sharing scheme, the commuter taxing municipality is better able to offer a competitive balance of services and taxes, preventing them from bleeding residents and businesses to the suburbs if not helping them attract new residents and businesses. Thus, tax-base sharing and commuter taxes do have the potential to mitigate sprawl, a desirable

outcome from a smart growth point of view. As discussed below, however, commuter taxes may be difficult to implement in Canada as it would necessitate granting municipalities new taxing powers.

Tools addressing Inefficient Land Uses

Two of the examined tools, land value taxation (LVT) and parking site tax (ST), both have the inherent potential to encourage smart growth by taxing inefficient land uses. LVT, by valuing land much higher than improvements on the land, strongly discourages the under-use of land. It is a strong incentive for replacing vacant lots, parking lots, and other inefficient land uses with more productive land uses. A parking ST, in contrast, more narrowly targets parking lots, especially unpaid lots. Although this was not a real motivation in adopting the parking ST by TransLink, taxing parking lots by area could persuade owners to reduce the surface area dedicated to parking and replace it with other uses. To have this effect, however, parking taxes would have to be significantly higher than those that were until recently in place in Vancouver. Given the level of political opposition to the modest parking taxes that were imposed by TransLink, it is unlikely that other jurisdictions would consider adopting parking taxes high enough to influence land use decisions. LVT has greater potential to encourage infill and densification, not only because it applies throughout the jurisdiction (as opposed to being limited to parking lots), but also because it is a revenue-neutral mechanism that generates little opposition from those affected by it (if properly introduced).

Coordinating Infrastructure and Land-Use Planning

A recurring theme in the case studies presented in this report is the coordination of infrastructure investment with land-use planning. This is particularly applicable to the case studies that looked at tools that encourage smart growth through spending decisions, especially the tools that generate funds for public transit infrastructure. This

4.3 Transfer to Other Jurisdictions

includes parking site taxes, HOT lanes, fuel tax transfer, tax increment financing, grant anticipation revenue vehicles (GARVEE), and vehicle registration surcharges. In the absence of coordination between infrastructure investment and land-use planning, the use of these tools would be of little use in attaining the goals of smart growth.

This lesson is well illustrated in the case studies on Edmonton and Calgary's CPF and Montreal's *Fond des contributions des automobilistes*. Merely channelling revenues from fuel taxes and, in Montreal's case, a vehicle registration surcharge into transit projects does not guarantee any smart growth outcomes per se. Case in point, Montreal's AMT has invested heavily in suburban commuter train lines that serve primarily car-oriented suburbs. While perhaps reducing somewhat the number of car trips to downtown Montreal, the commuter trains themselves may do very little to counteract sprawl and instil denser, more mixed use, and less car-oriented development. Arguably, this is because there has been very little coordination between transit planning and land use planning. In terms of smart growth, investing in new rapid transit facilities in the absence of well enforced, transit supportive land use planning represents a lost opportunity.

Edmonton, Calgary, Montreal and other Canadian cities could look perhaps to the San Francisco Bay Area's TOD leveraging mechanism for inspiration on how to derive smart growth from transit investment. The TOD leveraging concept could complement the tools that these cities currently use to obtain transit funding. The same tools would be used to raise the capital for a given transit project, but the investment could be withheld by a regional body until municipalities in the region meet the desired land-use conditions. TOD leveraging could, however, prove difficult to implement in Canada as it would require giving a regional government strong land-use planning enforcement powers. Provincial governments tend to resist conferring such powers to regional bodies.

Among the tools reviewed in this report, there are two types that should prove to be readily transferable to many jurisdictions in Canada with a minimum of difficulty: infrastructure charges and tools based on the property tax. The first category includes density and sectoral based development cost charges (DCCs) while the second category includes land value taxation (LVT) and tax increment financing (TIF). Green infrastructure-promoting tools, such as standard offer contracts (SOCs) and stormwater fees and credits, should be readily transferable, although they may require a significant administrative effort. Lending mechanisms such Certificate of Participation (COPs) and transit tax-revenue bonds will require legislative changes in order to be transferable to jurisdictions in Canada. Some of the tools used in the US, particularly those related to new forms of municipal taxation, while potentially useful for Canadian cities, could be difficult to transfer.

Some form of development cost charges are already used by many communities in Canada. Introducing density gradient and sectoral DCCs would therefore be possible with modifications to existing regimes. The enabling legislation and the administrative machinery required to assess development charges is already in place and would only have to be modified to accommodate these smart growth promoting approaches. The main administrative challenge would be in calculating the charges applicable to each density level and geographical sector within a municipality. As potentially large sums of money are involved, we can expect resistance from developers of low-density greenfield sites, whose projects are usually cross-subsidized through flat rate DCC regimes.

Property tax-based tools are even more ubiquitous than development charges. LVT is perhaps the easiest to transfer of all the tools reviewed in this report. Municipalities in many provinces already track the land values and building values separately for property tax assessment purposes. Introducing split rate

LVT merely requires increasing the weight of land value and decreasing that of building value in the property tax calculation. No new administrative capacity should be needed to do this, although enabling legislation may be required. TIF would be slightly trickier to implement throughout Canada. The concept of repaying infrastructure debts through tax increments itself should not be difficult to implement. However, all of the other conditions required for the success of TIF are likely to prove harder to accomplish. For TIF to work, infrastructure projects need to be well coordinated with land use planning. As discussed above, this type of coordination is proving difficult to achieve in Canadian cities.

Tax-base sharing, as exemplified by the Minneapolis-St. Paul region, appears to be a readily transferable concept in the Canadian context. In fact, as many Canadian cities have stronger forms of regional government than their US counterparts, this concept might even be more appropriate here than in the US. Many urban agglomerations in Canada already pool property tax revenues to fund regional infrastructure. There have already been efforts to equalize disparities between have and have-not municipalities, such as the municipal mergers in Ontario and Quebec. Political will at the provincial level is likely to be a requirement for tax base sharing to happen; relationships among municipalities, and especially between central cities and suburbs, are often antagonistic.

The Ontario standard offer contract (SOC), or more generally the Advanced Renewable Tariff (ART) concept, has proven to be transferable across Europe and should prove the same across Canada. In Ontario, a strong push from the Ministry of Energy and a significant administrative undertaking was needed to get the Renewable Energy Standard Offer Program (RESOP) running. A similar effort will doubtless be required in other provinces.

Cities in Canada could benefit from new lending mechanism such as Certificate of

Participation (COPs) and transit tax-revenue bonds. COPs are based on anticipated moneys from senior governments. Cities in Canada, like their US counterparts, are in a position to anticipate certain large grants from federal and provincial governments and therefore the COP mechanism is likely to work here. Transit tax-revenue bonds in the US are linked typically to special purpose taxes, such as LOST. As such types of taxation are generally not available to Canadian cities, this lending mechanism is not likely to take root in Canada without a major alteration to sales tax regimes.

Some of the of tools examined that are used in the US might not be easy to transfer, as useful as they could be to cities in Canada. The most difficult mechanism to implement in Canada, among the ones reviewed, are those that entail the creation of completely new revenue tools. Canadian cities have very limited powers of taxation and provincial governments tend to be unwilling to confer new ones upon them. For this reason, municipal income taxes, such as commuter taxes, and municipal sales taxes, such as LOST, are unfortunately not likely candidates for adoption in Canada.

Appendix:

Detailed Case Studies



A-1 High Occupancy/Toll Lanes, San Diego, CA

Summary

San Diego's High Occupancy Vehicle/Toll (HOV/HOT) Lanes permit single-occupant vehicles to drive in lanes previously designated HOV-only on a 13-kilometre section of Interstate 15 (I-15) for a variable fee. Pioneered by the San Diego Association of Governments (SANDAG) with assistance from the Federal Highway Administration's Value Pricing Pilot Program in 1996, the reversible, barrier-separated "Express Lanes" maximize HOV lane capacity, reduce multi-purpose lane congestion, and generate FasTrak®¹ toll revenue for transit service improvements in the I-15 corridor.

While buses, car pools and motorcycles use the HOV lanes for free, solo motorists who want to take advantage of the convenience and trip reliability of the HOT lanes must establish a pre-paid FasTrak account and obtain a transponder which is leased by SANDAG for US\$1.00 per month. Once mounted on the car windshield, the transponder communicates with an overhead electronic gantry which, when activated, seamlessly deducts a toll from the customer's account. Dynamic message signs situated far in advance of the HOT Lane entrances inform drivers of the current toll rate, which ranges from \$0.50 to \$8.00 depending on the amount of congestion in the two reversible Express Lanes at that time. The California Highway Patrol (CHP) polices the Express Lanes to verify presence of two occupants or payment of the toll.

Over the 10-year duration of the program, SANDAG has consistently found broad public support for the HOT Lanes. Besides maximizing vehicle and person throughput

>> HOV/HOT Lanes in San Diego use an electronic toll collection system



of the HOV lanes, helping offload congestion from the multi-use lanes, and deferring corridor expansion by five to ten years, over \$7 million in surplus toll revenue has been allocated to the local transit operator (Metropolitan Transit System) to fund express bus operations between the suburban North County area and downtown San Diego. The success of the I-15 HOT Lanes can be attributed to wide-ranging political support, extensive public consultation before and after launching the program, strong enabling legislation, multi-modal focus, sufficient funding, and good police enforcement.

Background

Located on the Pacific coast in southern California, San Diego County covers an area of approximately 11,000 square kilometers and has a population of over 3 million people. It is the third most populous of California's 58 counties and is predicted to grow by 37 percent to four million by 2030. As of 2004, median household income was \$52,000, a figure which is expected to increase to \$62,500 by 2030 (SANDAG, 2006). This is due in large part to San Diego County's proximity to the Mexican border and Los Angeles which provide access to multiple markets, goods and services (e.g., biotech, tourism, telecommunications). With an estimated annual Gross Regional Product of almost \$130 billion, the region is ranked thirty-fifth among national economies world-wide (County of San Diego, n.d.).

¹ FasTrak® is a registered trademark of the Transportation Corridor Agencies (TCA) and is the standard for electronic toll collection in the State of California.



The San Diego Association of Governments (SANDAG) is San Diego's metropolitan planning organization.² With a \$4 billion annual budget, SANDAG is a forum for regional decision-making that represents San Diego County and 18 cities within its borders. Like all US Metropolitan Planning Organizations, SANDAG undertakes regional transportation planning, growth management and air quality initiatives.

San Diego County is somewhat an agglomeration of suburbs that, despite an exploding downtown and growing emphasis on Smart Growth principles has very low overall land densities. As a result, traffic congestion is a major challenge for citizens and governments. Since 1984, the number of miles San Diegans travel has grown twice as fast as the population. In 1990, San Diegans made 9 million trips annually and this number had risen to 13.5 million in 2004. SANDAG's "Mobility 2030" Regional Transportation Plan (completed in 2003) projected trips to increase to 16 million by 2030. A \$50 billion budget was subsequently approved to build and operate roads, transit and cycling infrastructure during that time frame (Move San Diego, 2007).

Although the region is growing rapidly and the demand for hard and soft infrastructure services continue to increase, SANDAG has not experienced the financial difficulties that Metropolitan Planning Organizations across the US have encountered. Since 1978, development impact fees have paid for infrastructure (sewer/water/roads) and, once residents take ownership of land, a proportion of their property tax goes into a Facility Benefit Assessment District (Move San Diego, 2007). However, the San Diego Metropolitan Transit System has consistently been one of the most under-funded systems in the US (based on population) (Mike Deney, personal communication). In terms of capital, only 25 percent (\$12.5 billion) of the current transportation budget is allocated to transit which is not enough to build a feasible, cost effective system that is able to compete with the convenience of the San Diego's freeway network. Land use decisions and a lack

of operating funds have also undermined system efficiency (Jay Corrales, personal communication). For example, the South Bay Bus Rapid Transit Project, currently in the development phase, will cost a minimum of \$2.2 billion for HOV lanes (12 miles), three new stations and other major capital improvements. However, since only about half of the projected operating budget for 2009 to 2048 is covered (\$1.7 to \$3.7 million annually), the balance will have to be made up by the farebox and/or existing operating budgets (Mike Deney, personal communication).

The County's High Occupancy/Toll (HOT) Lanes are located on a 13-kilometre section of Interstate 15 (I-15), which stretches from the Mexican border through California north to Montana and the Canadian border. The San Diego portion of the I-15 connects the largely residential communities that are adjacent and north of the HOT lanes with major employment centers to the south and west (Toups, 2007; Hultgren and Kawada, 1999).

The idea of an I-15 HOT Lane facility evolved in the early 1990s when low utilization of the existing HOV lanes placed the item at the forefront of the SANDAG political agenda. SANDAG was also developing air-quality Transportation Control Measures to satisfy Clean Air Act requirements at this time. Although High-Occupancy Vehicle (HOV) reversible lanes³ had been installed on I-15 in 1988, the use of them, at 200 vehicles per hour by 1991, was well below the expected 700 vehicles per hour. At the same time, the "severe" congestion on the mixed-flow lanes was getting worse and the twenty daily round trips (almost 11,000 revenue hours) provided by Metropolitan Transit System express routes 810, 820, 850 and 860 to/from the suburbs of Escondido, Poway, Rancho Bernardo and Rancho Penasquitos was not helping much (Brent Boyd, personal communication).

This situation led the City of Poway Mayor and SANDAG board member Jan Goldsmith to suggest the possibility of converting the existing HOV lanes to HOT lanes. After

2 Metropolitan Planning Organizations are consensus-based, volunteer organizations comprised of local government personnel representing a minimum combined population of 50,000. State legislatures can pass legislation that affect local governments (including Metropolitan Planning Organizations) but don't necessarily provide funding to support local services.

3 With traffic volumes projected to reach 260,000 average daily trips by 2010, the California Department of Transportation designed the HOV facilities to allow for exclusive bus lanes or LRT (Antwi, 1999).

county-wide lobbying and public speaking, his proposal to “sell off excess HOV space” so that revenues could be allocated to public transit improvements in the corridor was approved by the SANDAG Board in May 1991 but still required state legislative approval to proceed (King et al., 2007).

At the end of 1992 Goldsmith was elected to the State Assembly, where he wrote a bill to permit the HOT lane conversion. Despite public concerns about HOT lanes becoming “Lexus Lanes”⁴ and strong opposition from powerful State politicians and the Automobile Club of Southern California (all of whom who did want to see tolls of any type), the legislature authorized the HOT lane bill in 1993. The toll revenue now helps fund the Inland Breeze express bus service that takes riders between downtown San Diego and the North County suburbs along the I-15, including the HOT lane section (Hultgren and Kawada, 1999; King et al. 2007). SANDAG has conducted numerous surveys, stakeholder interviews and focus groups which have consistently found broad public support and a high level of acceptance for HOT lanes among users of the facilities (solo drivers, car poolers, transit riders) as well as drivers who continue to use the multi-purpose lanes (Derek Touns, personal communication).

Description of the Instrument

A HOT lane is a specialized transportation facility that comes under the moniker of “managed lanes”⁵. Like HOV lanes, HOT lanes are limited access lanes in which vehicles with more than one person (e.g., carpools, vanpools, and buses) have first priority. The difference is that, when the lane is being underused by HOVs using it for free, a limited number of customers in single-occupancy vehicles (SOV) can gain access to the lane by paying a fee. In the case of the I-15, the HOT lanes were installed to maximize the use of existing capacity, improve transit and HOV services and relieve congestion.

The I-15 freeway consists of four multi-purpose lanes in each direction and two reversible HOT lanes located in the freeway median. The HOT lanes, which stretch for 13 kilometers (8 miles) are 12-feet wide and have 10-foot shoulders. Barriers separate the HOV lanes from the main lanes and vehicle access is available only at the two endpoints of the facility (Hultgren and Kawada, 1999).

Initially known as ExpressPass and now called FasTrak, the HOT lane project was implemented in two phases. In the initial, 16-month phase, which began in December 1996, solo drivers⁶ were allowed to use the HOV lanes upon purchase of a permit that gave them unlimited use of the HOV lanes for a flat monthly fee. Since no manual or cash toll collection was made available, verification and enforcement relied on visual inspection of a color-coded windshield decal by the California Highway Patrol. When the second phase began in June 1997, the decals were replaced by electronic transponders. As a result, solo drivers must now be registered, create a pre-paid FasTrak account and purchase a transponder, a small battery powered radio device, which is mounted on the inside of their car’s windshield. Overhead antennas located at the entrance to the HOT lane facility read the transponder and, when the vehicle passes under it, automatically deducts the toll from the customer’s account.

In order to maintain free-flow traffic conditions at all times for HOV travelers using the I-15 HOT lane, sensors embedded in the corridor evaluates traffic conditions and adjusts the toll rate accordingly. Variable message signs located in advance of the HOT lane entrance inform drivers of the current toll, which usually ranges from \$US .50 to \$US 4.00 (but can rise as high as \$US 8.00 during severely congested conditions). Drivers then have sufficient time to choose whether or not to enter into the special lanes and pay the toll. Proper HOT lane use continues to be enforced by the California Highway Patrol.

4 “Lexus Lanes” is a term attributed to toll lanes by some critics who believe that toll lanes can only be afforded by affluent car drivers while others of lesser means must remain stuck in multi-purpose lanes.

5 According to the Texas Transportation Institute (TTI), managed lanes is an all-purpose term that “encompasses a variety of facility types, including HOV lanes, high occupancy toll (HOT) lanes, single-occupancy vehicle (SOV) express lanes, special use lanes, and truck lanes... the theory behind managed lanes is to set aside certain freeway lanes and to use a variety of operating strategies to move traffic more efficiently, providing travelers with more choices than driving alone on a congested freeway” (Poole and Orski, 2003).

6 Solo drivers who sometimes carpool need a transponder. Solo motorcycle drivers can use HOT lanes for free. Light trucks and SUVs are allowed to use the lanes but large trucks and commercial vehicles are not.



Administrative Aspects

The FasTrak Customer Service Center mails customers quarterly statements based on the use of the lanes. Those who do not make use of the lanes at least once a month are charged two monthly administrative fees: \$3.50 to maintain the account and \$1.00 for the cost of each transponder they lease. Customers appreciate the seamless system that is tied in with online banking (Derek Touns, personal communication). They can also stay up-to-date on FasTrak programs and other information by accessing information on the FasTrak website (www.sandag.org/FasTrak) and/or subscribe to an email service. Information about the FasTrak program and a phone link to a live operator in the FasTrak Customer Service Center are available through the region's "5-1-1" Automated Traveler Information System; the Service Center also has a toll free phone line and email address to field compliments and complaints from both customers and non-customers.

The California Department of Transportation (Caltrans) is the owner/operator of the Express Lanes and retains primary responsibility for the freeway design specifications, physical improvements and traffic operations while SANDAG is a key project partner and is responsible for the FasTrak value pricing operation and customer management. TransCore LP, a private transportation firm specializing in Intelligent Transportation Systems, has been contracted by SANDAG to provide the electronic toll collection, the violation enforcement system and customer service operations. The California Highway Patrol provides enforcement and the San Diego Metropolitan Transit System assists in the planning and implementation of transit-service improvements funded by the project.

A Project Management Team consisting of SANDAG, California Department of Transportation/Caltrans, CHP, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), California Highway Patrol and Metropolitan Transit Development Board/MTS staff provides technical review and direction on all aspects of project planning, design and implementation. Team meetings are held on a bi-monthly basis.

Linkages

The I-15 HOT lanes are linked to policies and programs at all government levels. They were initially made possible by a grant from the FHWA's Value Pricing⁷ Pilot Program (formerly known as the Congestion Pricing Pilot Program). This program has special legislation⁸ that ensures that toll revenues be spent specifically on transit operations, telecommuting and related programs (RFF, 2007). More generally, policies enacted through the FHWA's Safe, Accountable, Flexible, Efficient Transportation Equity Act and the Environmental Protection Agency's Clean Air Act regulate transportation activities by allocating funds only to those State and local projects that meet multi-modal and air quality guidelines.

At the regional level, the HOT Lanes help meet the policies outlined in SANDAG's Regional Transportation Plan (Mobility 2030) and Regional Comprehensive (Land Use) Plan. Each plan focuses on the importance of "connecting local and regional transportation and land use plans, and creating incentives that encourage 'smart growth' planning and actions". Further, as is the case with States, Metropolitan Planning Organizations like SANDAG can only receive direct federal funding after supplying the FHWA with a variety of land use, transportation and (if in non attainment areas) air quality plans. Significantly, Metropolitan Planning Organizations may not expend federal funds for any project that increases the capacity for single occupant vehicles (Chioti and Collier, 2007).

>> San Diego from above



7 Value pricing refers to a system of fees or tolls paid by drivers to gain access to dedicated roadway facilities providing a superior level of service compared to the competitive free facilities. Value pricing permits anyone to access the managed lanes, and the value of the toll is used to ensure that the management goals of the facility are maintained (see <http://managed-lanes.tamu.edu/products/glossary.stm>).

8 Metropolitan Planning Organizations normally cannot spend federal highway aid on transit operations.

Financial Aspects

Since its beginning almost two decades ago, the HOV/HOT lane project has gone through many phases and financing arrangements. A \$31.5 million investment was made to set up the original reversible HOV lanes on the I-15 in 1988. After the approval of HOT Lanes by the State of California in 1992, the Federal Transit Administration provided a \$230,000 grant for initial HOT lane planning phases on the I-15 HOV Expressway. This was followed in 1995 by a \$7.96 million FHWA grant for project implementation which was matched by local funds totalling \$1.99 million, a portion of which included funding from the State for express bus service in the I-15 corridor.

Today, very few SANDAG staff members are directly involved in the project as most functions are contracted out. I-15 toll revenues generate approximately \$1.3 to \$2.5 million per fiscal year are allocated on a revenue neutral basis as follows:

- \$60,000 for California Highway Patrol enforcement
- \$750,000 to \$1 million for maintenance and operation of the electronic toll collection system and Customer Service Center by TransCore.
- \$490,000 to \$1 million towards the operation of Inland Breeze express bus service in the I-15 corridor
- Miscellaneous material costs (e.g. transponders)

Although I-15 traffic volumes had tripled to 250,000 Average Daily Traffic between 1992 and 2002 (California Department of Transportation, 2002), HOT lane revenues began to decline in 2004 after the opening of State Road 56, an adjoining east-west corridor. Because that corridor's eastern entrance is located at the northern end of the I-15 HOT lanes and provides drivers with direct access to employment areas in the western part of the region, traffic congestion in the I-15 multi-use lanes decreased immediately. This, in turn, caused traffic volumes in the I-15 HOT lanes to decline by between 40 and 50 percent as many car pooling or toll paying customers observed less congestion on the adjacent lanes. One probable explanation

for the decline in traffic volumes is that car pool and toll paying customers could now drive alone in the multi-use lanes without paying a fee or losing any travel time advantage.

Just the same, since 1996, the HOT lanes have generated over \$7 million for enhanced transit while providing more sustainable transportation choices to drivers. It is possible that implementation of HOT lanes in the San Diego region may have deferred additional investment in highway capacity that would have otherwise been needed 5 to 10 years earlier.

Outcomes

Given the fact that the I-15 HOT Lane strategy was devised in the early 1990s, the lanes represented new transportation thinking that shifted the focus from system expansion to system management. As well, it was the first time that HOT lanes had been introduced anywhere in the world and they were considered almost a decade prior to smart growth becoming a goal for planners and politicians.

San Diego's HOT lanes were intended to reduce congestion, generate revenue for corridor transit and increase transportation options. Carpools in the HOT lanes jumped from 5,000 vehicles a day in 1988 to the current 10,200 carpools a day. Since a carpool must have a minimum of two people per car, this figure translates into at least 20,400 fewer vehicles a day in the mixed-flow lanes. Average vehicle occupancy in the HOT lanes increased 14% between 1988 (the year before the managed lanes became operational) and 2001 (CADOT, n.d.). Although carpools still comprise the majority of vehicles, the HOT lanes have been very successful in attracting paying solo drivers who, as of 2002, constituted 25 percent of all vehicles in the lanes (Poole and Orski, 2000).

In terms of public transportation, the \$490,000 to \$1 million in surplus funds generated annually by the HOT lanes enabled the San Diego Metropolitan Transit System to complement the four existing routes (810, 820, 850, 860) with new Inland Breeze express bus routes (980, 990) starting in November 1998. Routes 20 and 830 were also

added but the latter route was subsequently discontinued. Operating from downtown to communities adjacent to the I-15 corridor (e.g. Mira Mesa, Kearny Mesa, Fashion Valley, Hillcrest, Rancho Bernardo, Escondido), the Inland Breeze routes provided 22 additional southbound trips and 21 additional northbound trips – a 108 percent increase in one-way trips and a 104 percent increase in revenue hours (Brent Boyd, personal communication).

In an effort to concentrate service where transit demand was heaviest, the Inland Breeze routes were discontinued in January 2007 and substituted with improvements to routes 810, 820, 850 and 860. Now known as “Commuter Express Buses”, these routes average about 50 kilometers long and cost \$4.00 per ride, make 20 southbound trips to downtown each morning (5:20 am-8:45am) and 24 northbound trips each evening (2pm-7pm). For those traveling to or from the same locations outside of rush hour and on weekends, “express” route 20 has up to 57 daily buses available (4:45am-11:45pm) but the \$2.50 one-way journey takes at least twenty minutes longer.

Before the Inland Breeze service ended, it carried over 535 passengers on weekdays (79,845 passengers annually). Routes 810, 820, 850 and 860 currently carry almost 960 passengers on weekdays (244,500 passengers annually) (Brent Boyd, personal communication). More choice riders living near the I-15 corridor deciding to use the commuter express buses as gas prices and downtown parking rates increase (Mike Deney, personal communication). Although the direct impact on overall congestion is difficult to calculate, the new transit service in the I-15 corridor may have indirectly “contributed quite significantly to reducing congestion, because it provided the motivating force that led elected officials to fight for the variably priced toll lane” (King et al., 2007). SANDAG now plans to investigate the potential for Transit Oriented Development (TOD) in close proximity to the I-15 commuter express bus stations in hopes of further increasing corridor transit ridership in the future (Derek Toups, personal communication).

Environmentally speaking, HOT lanes can decrease smog pre-cursors and climate change emissions since vehicles burn fuel more efficiently and pollute less when traveling at a steady speed than when they are slowed in stop-and-go traffic (CADOT, 2002).

Assessment

Pricing a road – especially one that was originally “free” -- is politically controversial. As both a Mayor and an Assemblyman, Jan Goldsmith devoted considerable effort to selling the idea to the public through op-eds and public talks (King et al., 2007). Despite fears that transit and carpool speeds would be impeded by SOVs in the HOT lanes, and claims that the lanes would be unfair to lower income drivers, his outreach seemed to work.

SANDAG conducted extensive outreach to measure public response to the HOT Lane and the fact it incorporates a toll. These efforts have consistently revealed broad support for managed/HOT lanes across demographic stratas (e.g., ethnicity, age, income). In 2001, SANDAG hired the Fairfax Research Group to survey drivers regarding the I-15 HOT lanes. In general, the public were more satisfied with the corridor after the addition of HOT lanes than with the old HOV lanes. According to Pollhill (2002):

- 66% of non-users and 88% of HOT lane users approved of the I-15 HOT lanes
- 70% of all voters agreed with the statement that “People who drive alone should be able to use the I-15 Express Lanes for a fee.” At 81%, more low income voters (income under \$40,000/year) supported this statement than the 71% of high income voters (greater than \$100,000/year)
- 90% of HOT lane users and 73% of non-users stated that the HOT lanes reduce congestion on I-15.

When asked what was the single most effective way to reduce congestion on I-15, respondents stated that it was important to:

- Extend the HOT lanes (49% of HOT lane users; 37% of non-HOT lane users)

- Add regular lanes (24% of HOT lane users; 26% of non-HOT lane users)
- Build other roads (13% of HOT lane users; 21% of non-HOT lane users)
- Add transit (10% of HOT lane users; 11% of non-HOT lane users)
- Over 70% of both HOT lane users and non-users stated that having SOVs on I-15 HOT lanes was fair.

However, by 2006, the FHWA was boasting that between 70% and 84% of citizens favoured a northward extension of the I-15 HOT lane. According to Associate Administrator for Operations Jeffrey Paniati, “low-income motorists value the lanes as ‘insurance’ for a reliable trip time when they need to be somewhere on time – for work, or to pick up a kid from day care – just as high-income motorists do. That is why there is no significant difference between high and low-income motorists with regard to approval of priced lanes.” (FHWA, 2007a)

According to Poole and Orski (2000) and the FHWA (2006), HOT lanes accomplish several objectives, including:

- Generating revenue for both soft and hard infrastructure, usually related to transportation services where the HOT lane facility is located. Potential investments include highway improvements (maintenance, expansion), transit service (capital and operating) and related HOT lane operations (e.g. administration, customer service, enforcement).
- Increasing route efficiency over regular HOV lanes by diverting a controlled number of solo drivers from adjacent congested general-purpose (mixed-flow) lanes into HOT lane.
- Reducing automobile emissions resulting from “stop and go” conditions.
- Providing motorists with time savings when they are willing to pay for the better service. This “premium” option of traveling on less-congested lanes can save drivers between 10-15 minutes thus enabling them to reach their destination on time.
- Relieving political pressure to

decommission HOV lanes to general use or full pricing on all lanes.

- Achieving community acceptance to the extent that a managed-lanes approach reduces the need to acquire additional right of way.
- Generates detailed data about the use of the road so statistical analysis and subsequent improvements can be carried out.

Even with broad public support and extensive research into the benefits of HOT lanes, some opposition still remains. Many I-15 motorists are in favour of fighting congestion through higher tolls rather than through more stringent vehicle occupant requirements (e.g. HOV lanes). They also are in favour of toll revenues being allocated to highway needs as opposed to transit (Tollroads News, 1998). Newspaper columnists also weigh in on the issue stating that real estate is being wasted and SOVs should have more lanes to access (Derek Touns, personal communication). On the opposite side of the argument are non-profit groups like Move San Diego who call for a moratorium on any road widening to relieve congestion – even if expansion is being undertaken to provide enhanced transit service. Rather, they believe that the HOT lanes (and the HOV lanes that predated them) should have (1) been built in the existing right-of-way (as opposed to the median) and (2) should not have different modes (e.g. buses, cars, motorcycles) sharing the same lanes due to the potential for car crashes that can disrupt transit service (Jay Corrales, personal communication). With many 10-lane freeways in the San Diego region already operating at or near capacity, and based on the high cost of additional right-of-way acquisitions, SANDAG has shifted its focus to coordinated land-use and transportation planning and on optimizing the use of existing facilities through better system management and demand management (Derek Touns, personal communication).

Because the San Diego area HOT lanes have been successful as an effective method of managing congestion, they have also been implemented or studied for application in Atlanta, Dallas, Denver, Houston, Los Angeles, Miami, Phoenix, San Francisco, Washington,

D.C., Seattle and Minneapolis (FHWA, 2007b). Both Denver and Minneapolis have used the I-15 HOT lane model as a basis for their own projects. In most of these cases, HOT lanes have replaced ineffective HOV lanes in severely congested corridors so that solo motorists have more lane choices – if they are willing to pay for the privilege. (For more detail on HOT lane applications across the US, see Footnote #37 (page 17-26) and #43.)



In order to deliver HOT lanes, local political support is pivotal. If HOT lane support is not present, they will generally be perceived as a negative project by the public. In the case of the I-15 project, Jan Goldberg championed the HOT lanes both within the region and at the State level (Derek Toups, personal communication). Other important issues and lessons learned include:

- **Enforcement** – Ensuring that only solo drivers with valid transponders use the HOT Lanes is an issue since there is a 5-15% violation rate. In Texas and Virginia the violation rate is as high as 50%. Currently, automating enforcement systems (to detect the number of people per vehicle) is technically difficult and privacy concerns are also an issue. New research is being watched closely by SANDAG to deal with these challenges.

- **Multi-Modal Infrastructure** - When implementing a HOT Lane, it is critical that bus rapid transit be integrated into the facility. If not, the “Lexus Lanes” argument may become more prevalent. Better still is to have transit embedded as a requirement in legislation, as it is in San Diego (California Department of Transportation Highway Code 149.1 -- Interstate 15 Value Pricing and Transit Development Program).
- **Funding** – It is important to have seed money for new projects from upper levels of government since Metropolitan Planning Organizations usually do not have the means to implement HOT lanes on their own.
- **Legislation** - Substantial changes in federal and state laws since 1991 helped make the I-15 HOT Lanes possible and ensure that they were not easily converted to mixed use lanes.
- **Land Use** – The Inland Breeze is serving a very suburban residential area characterized by 1,500 to 2,000 square foot homes and 3-car garages. Despite SANDAG attempts at promoting smart growth, downtown businesses are calling for more parking lots of all types (surface, above ground, below ground). This will have a detrimental effect on bus ridership. (Mike Deney, personal communication)

However, like all public projects, the overall success of the I-15 HOT lanes does not necessarily mean that they are the correct fit for every context. For example, because HOT lanes are auto-oriented, it may be more beneficial for a dense urban area to provide rail and/or mass transit if the high costs can be justified. On the other hand, HOT lanes that are designed to function more like a rail corridor can guarantee trip times while meeting other policy goals (Derek Toups, personal communication).

Where the political will, legal authority and initial funding exist, HOT lane technology could be implemented in congested highway corridors in and around Canadian cities. Whether HOV lanes currently exist or not, re-designed infrastructure (e.g. separated lanes in median or with Jersey barriers, strategically located overhead electronic gantries,

embedded sensors, variable message signs) and a new administrative/toll billing system would be required. As was done in San Diego, a dedicated police force and on-going marketing campaign would also be essential to educate Canadian motorists about HOT lane use and misuse.

While the installation of HOT lanes, or any road tolling system, would require upfront financial resources and technical analysis, there may be political barriers that stand in the way of any type of road pricing in Canada. This is mainly due to the fact that, for most of the last century, controlled access roads (i.e. highways) have, with a few exceptions, been funded by fuel and general tax revenues. The result of this fiscal policy has, in effect, made the building, expansion and maintenance of roads appear to be “free” to the motoring public. The US, on the other hand, has had a long history of toll roads and other transportation user pay systems.

Among the few exceptions in Canada is Ontario’s 108 km Highway 407 Express Toll Route (ETR), a bypass of Highway 401 – the country’s busiest highway – north of Toronto. Like San Diego’s HOT lanes, the ETR uses an automated billing system. The 407 ETR is similar to HOT lanes in the sense that it allows motorist to travel in less congested express lanes parallel to regular highway lanes, albeit in this case the express lanes are in a separate right of way rather than in the median between the regular lanes. As in San Diego, the tolls are variable. In this case, there are two fixed toll rates – a lower toll for off-peak and higher for peak hours – whereas San Diego’s HOT tolls vary continuously with traffic volume. The key differences between the 407 ETR and San Diego HOT lanes are that the former is not free for HOVs and toll revenues are only used to pay for the highway but not for public transit. The 407 ETR has invoked only limited public opposition and is popular with Toronto-area motorists, even if they gripe about toll increases whenever they occur (Toronto Star, 2006). The 407 ETR demonstrates the feasibility of an automated, variably priced tolling system in a large Canadian city and shows that motorists are not necessarily averse to road tolling under the right conditions.

Resources

INTERVIEWEES

Boyd, Brent
Senior Transportation Planner
Metropolitan Transit System
(619) 595-4983
brent.boyd@sdmts.com

Corrales, Jay
Board Member
Move San Diego
(858) 272-0347
info@movesandiego.org

Toups, Derek
Associate Regional Planner
San Diego Association of Governments
(SANDAG)
(619) 699-1907
dto@sandag.org

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WEB RESOURCES

FasTrak I
<http://www.sandag.org/index.asp?classid=29&fuseaction=home.classhome>

San Diego Association of Governments (SANDAG)
www.sandag.org

Metropolitan Transit System
www.sdmts.com

Move San Diego
www.movesandiego.org

A-2 Sector and Density Gradient Approach to DCCs, Kelowna, BC

Summary

Development Cost Charges (DCCs) are charges imposed by municipalities on developers to pay for the infrastructure needed to support growth. When a municipality introduces DCCs, it shifts the burden of paying for new infrastructure from existing residents (through the tax base) to newcomers (assuming that the developers pass on the charge in the selling price of the house) (Vander Ploeg, 2006). DCCs may also be used as an effective incentive for smart growth development because they may be set to encourage development in specific areas of a city or at increased levels of density. Kelowna's DCC program is an interesting case study because it has been configured to do both.

Rising infrastructure costs associated with urban expansion in the early 1980s prompted Kelowna to adopt a DCC program in 1988, which charged developers a higher rate for new developments in sectors outside the city centre. Various rate structures were developed for funding new roadways, sewer and water lines as well as parklands.

Increasing housing prices through the 1990s, however, put pressure on the City to further encourage the development of smaller more affordable housing units and improve land-use efficiency. In 2004, the City attached a density gradient to its system of Sector DCCs. The purpose of the density gradient was to further encourage the development of smaller units and achieve greater land use efficiency among residential developers throughout the city by charging developers based on the density of new properties. Land-use efficiency for industrial, commercial and institutional development is also encouraged using DCCs, which are applied on an area basis.

Kelowna's DCC program has been successful in shifting the cost of infrastructure to support new development to incoming residents. However City officials claim it has been difficult to evaluate the effectiveness

of its DCC program in advancing smart growth principles as rising housing prices have also played a strong role influencing infill and denser development (Paul Macklem, personal communication). The addition of urban amenities to the central core has also encouraged multi-unit residential housing, yet Kelowna continues to struggle with the need for quality affordable housing. Suburban developments outside city limits also pose significant challenges as developers try to maximize real estate values in communities beyond city limits and the reach of the City's DCC program.

Background

The population of the City of Kelowna was 106,707 in 2006, with 162,276 living in the larger metropolitan area (Statistics Canada, 2007). Kelowna's population growth rate ranked fifth in the country (behind only Edmonton, Oshawa, Calgary and Barrie), gaining 8.2 percent between 1996 and 2001 and 9.8 percent between 2001 and 2006 (BC Stats, 2007). City officials predict that Kelowna will continue to experience high growth rates, requiring over 25,000 additional housing units by 2020.

The impetus for DCC usage in BC dates back to 1958 when the provincial government made several amendments to the Municipal

>> Kelowna, British Columbia



Act to help local governments fund growth-related infrastructure. The amendments gave municipalities the authority to reject development proposals if the associated infrastructure costs were excessive. By 1971, the BC government legislated the use of land use agreements as the administrative vehicle for imposing development restrictions and infrastructure fees, negotiated with developers on a project-by-project basis. In 1977, the BC government replaced this legislation with a law allowing municipalities and regional districts the authority to levy DCCs according to a formula, which may be applied across the whole municipality or varied by sub-sector based on development parameters such as the type of residential units (Ministry of Municipal Affairs, 2000). The DCC rates are calculated so as to raise the funds needed to pay for the infrastructure required to support the anticipated growth.

When Kelowna adopted its first DCC by-law in 1988, the rates charged to developments in central areas were lower than elsewhere in the city in order to reflect the relative cost savings of building near existing infrastructure. However, the original by-law did not recognize the greater infrastructure efficiency of multi-unit over detached housing. Research conducted for the City in the mid-1990s prompted the City to investigate the feasibility of introducing a density gradient that would reduce infrastructure costs for multi-unit buildings.

In 1999, the City hired an independent consultant to evaluate infrastructure costs and servicing requirements for new developments and provide recommendations on how to create more compact and affordable housing. The external review found that the City could improve housing affordability and reduce infrastructure costs by reducing DCCs in denser developments, while increasing them for single-dwelling units without reducing DCC revenues (Government of British Columbia, 2005).

Accordingly, the City of Kelowna Department of Finance proposed a gradient system for the DCC program in 2001 with the idea

of harmonizing financial and servicing plans with the Official Community Plan (OCP), which called for more compact and affordable development (Government of British Columbia, 2005). Under the proposed system, differential rates would reflect the different level of demand imposed on certain types of services by construction at different densities (City of Kelowna, 2007, p. 11). Developers lobbied against the proposed amendments to the DCC program, arguing they would have a negative impact on the single detached housing market. The proposed bylaw amendment allowing a density gradient was subsequently revised to reduce impacts on single-dwelling units and was adopted by Council in 2003 and implemented in February 2004⁹.

Description of the Instrument

The basic principle underlying Kelowna's approach to DCCs is that rates are configured to reflect the relative capital cost burden of different developments on the City for the provision of infrastructure (City of Kelowna, 2007, p. 12). In order to reflect relative infrastructure costs, DCC rates vary depending on density and location. The program is based on the assumption that low density, greenfield developments further from existing infrastructure cost more to service than higher-density, centrally located development, and should be charged accordingly.

There are five types of DCCs: for parks, roads, water, and sewage trunk facilities, and sewage treatment. Capital cost estimates are prepared for each type of infrastructure and for each geographical sector using engineering data and planning analysis to reflect different burdens on the municipality. The definition of the geographical sectors differ by DCC type as shown in figure 1 (p. 69).

There are seven different sectors (and therefore seven different rates) for Road DCCs, while only two sectors are defined for Treatment and Trunk DCCs. Water DCCs are applied in three sectors, whereas park charges are applied throughout the city at a single rate, i.e., there is only one geographical sector.

⁹ Council adopted the current OCP bylaw governing Kelowna's DCC program in June 1995 and approved a major OCP policy update in the form of an OCP amendment in 2004 including new land-use plans, road networks, financing strategies and mapping were approved by Council on January 19, 2004.

Table 1: Development Cost Charges for Services in Kelowna (per lot or unit)

	Residential 1 <i>Up to 15 units/ha</i>	Residential 2 <i>16-35 units/ha</i>	Residential 3 <i>36-85 units/ha</i>	Residential 4 <i>Greater than 85 units/ha.</i>
Roads				
South Mission	\$19,794	\$15,835	\$10,887	\$10,293
SE Kelowna	\$17,941	\$14,353	\$9,867	\$9,329
Bell Mountain	\$14,765	\$11,812	\$8,121	\$7,678
University	\$12,391	\$9,913	\$6,815	\$6,443
NE Rutland	\$10,900	\$8,720	\$5,995	\$5,668
Gallagher Ridge	\$12,222	\$9,778	\$6,722	\$6,356
City Centre	\$7,388	\$5,911	\$4,064	\$3,842
Water				
Clifton	\$2,943	\$1,972	\$1,413	\$1,001
City Centre	\$1,646	\$1,103	\$790	\$560
South Mission	\$1,292	\$866	\$620	\$439
Trunk Sewers				
South Mission	\$1,533	\$1,273	\$859	\$828
City Centre	\$1,143	\$949	\$640	\$617
Wastewater Treatment				
City Centre /S. Mission	\$2,542	\$2,110	\$1,423	\$1,373
Parks				
All Sectors	\$3,610	\$3,610	\$3,610	\$3,610

NB: The amount of DCCs payable for a mixed-use development is calculated separately for each portion of the development according to the areas of the different types of use.

Source: City of Kelowna Department of Financial Services, 2007

In order to reflect the different infrastructure costs associated with different residential densities, the City has identified four categories of residential development. Equivalency factors are applied, depending on the residential development category, to calculate the

DCCs applicable to any development project. Equivalency factors are calculated in relation to a single-detached residence at a density of up to 15 units per net hectare. Table 2 provides the equivalency factors for the various infrastructure services covered by the DCC bylaw.



Table 2: Equivalency Factors for Density Categories and Service

Density Category	Roads	Water	Sewer	Density
Residential 1	1.0	1.0	1.0	Up to 15 units per hectare
Residential 2	0.80	0.67	0.83	16-35 units per hectare
Residential 3	0.55	0.48	0.56	36-85 units per hectare
Residential 4	0.52	0.34	0.54	86+ units per hectare

Source: City of Kelowna Department of Financial Services, 2007

Rates are adjusted often (up to once a year) to reflect changes in growth trends and capital costs. Rates have increased over the past several years although charges in the city centre remain lower than outlying areas. Table 3 shows the charge for different residential densities in different sectors of the city in 2007.

For example, the total charge for a residential unit with a density of 36-85 units/ha located in the City Centre is \$10,527. This compares with the \$17,399 that would be paid by a unit of 36-85 units/ha in South Mission. The total charge for a single detached unit (up to 15 units/ha) in the City Centre is \$16,329

compared with the \$28,771 fee that is levied in South Mission (Government of British Columbia, 2005).

DCCs for commercial and institutional spaces are charged relative to a baseline of 1000 sq. ft of floor area and vary by sector. Industrial spaces are charged relative to a baseline of 1 acre and also vary by sector. These values are then converted to an equivalent residential unit for each type of infrastructure. The following is a breakdown of the cost-sharing model for commercial, industrial and institutional spaces in Kelowna (City of Kelowna, 2007, p. 16).

Table 3: Commercial, Industrial and Institutional DCC Gradient

Commercial		
Roads	1,000 sq. ft	.31 of a residential unit
Water	1,000 sq. ft	.38 of a residential unit
Sewer	1,000 sq. ft	.38 of a residential unit
Industrial		
Roads	1 acre	1.0 residential units
Water	1 acre	2.8 residential units
Sewer	1 acre	2.8 residential units
Institutional		
Roads	1,000 sq. ft	.31 of a residential unit
Water	1,000 sq. ft	.38 of a residential unit
Sewer	1,000 sq. ft	.38 of a residential unit

Source: City of Kelowna Department of Financial Services, 2007

DCCs are charged to the developer at the time of permit registration and may be paid in installments if the charge exceeds \$50,000 (City of Kelowna, 2007, p. 12). Charges for roads, water, trunk sewers, sewage treatment and parks are lumped together and appear as a single line item on each statement. DCCs are waived under certain circumstances, including the construction or renovation of places of worship and where renovation permits do not exceed \$50,000.

According to section 932 of the Local Government Act, a municipality may provide assistance to homeowners by waiving or reducing a development charge for not-for-profit rental housing, including supportive-living housing. The City has accordingly made several amendments to its DCC bylaw to reduce the cost burden of development charges on low-income residents.

The City is currently in the process of updating its density gradient through a bylaw change expected in February 2008. The bylaw is expected to create a more appropriate charge for secondary suites and different sized units within existing DCC categories to encourage subdivided plots as a source of affordable housing.

Administrative Aspects

As required by BC law, DCCs must be implemented through a municipal bylaw, setting forth the conditions under which DCC levies apply. The bylaw lays out a detailed schedule of DCC rates, the services they are used to fund, different land uses and the different areas of the city to which they apply (City of Kelowna, 2007).

The Local Government Act further requires that the Inspector of Municipalities located within the Ministry of Community Services approve all new DCC bylaws.¹⁰ This review process ensures that the methodology is sound and complies with all legislative requirements, that all stakeholders have been consulted, and that the rate structure has been properly assessed. This administrative procedure must be conducted before the implementation of any DCC bylaw (Government of BC, 2005b).

Once a bylaw is adopted, Kelowna's Department of Financial Services is responsible for managing the DCC program although the City's water, roads, sewer and parks departments also play a role in administering the program. A fund is created for each type of infrastructure and the various funds are kept separate from general municipal revenue fund. The money raised for each type of infrastructure is spent exclusively on the targeted infrastructure.

A DCC credit system is used for front-loading infrastructure to new developments that has benefits beyond the one development, such as major roads. Latecomer fees may also be charged in cases where infrastructure costs warrant large upfront expenditures, as is often the case with sewer costs.

Not all the revenue needed to pay for infrastructure is generated by DCCs. In setting the DCC levels for each infrastructure type, the City employs a series of "assist factors" to determine the amount of general taxation that will be involved in infrastructure funding. Assist factors are units that reflect the share of taxation that is expected to bolster infrastructure financing. The assist factor on roads is set at 15 percent, 8 percent for parks, and 1 percent for sewer trunks, sewer treatment, and water (City of Kelowna, 2004, p. 224).

Linkages

The BC government requires that DCCs be linked with the timeframe and objectives of each municipality's Official Community Plan (OCP) (Government of BC, 2005b). The current OCP bylaw was passed by council in 1995 and then updated in 2004 when council approved a major OCP policy update. The amendment included new land-use plans, road networks, mapping and financing strategies to further encourage dense, mixed-use development. For instance, the OCP makes several references to the need to amend existing zoning bylaws to encourage denser development including taller buildings in parts of the city, increase the number of buildings with a mix of uses and build safe, high-quality, pedestrian-oriented public

10 The Inspector of Municipalities rarely rejects changes proposed by a municipality, but can do so pursuant to S. 937(2) of the Local Government Act. During the period January 1, 1999 - September 30, 2007, nine (9) DCC bylaws were returned to local governments unapproved by the Inspector of Municipalities. Most of those bylaws were subsequently replaced by a new bylaw, which was approved. During the same period, 224 DCC bylaws were approved (Scott Coe, personal communication).



spaces (OCP, 2007:65). These planning goals are driven in part by the City's desire to achieve more efficient land use patterns and reduce infrastructure costs.

In addition to providing DCC legislation, the BC government acts as an information resource for municipalities investigating innovative financing options by publishing guides on financing strategies and best practices. The BC Ministry of Community Services also offers several programs that fund innovative planning studies, including the Smart Development Partnership Program and Infrastructure Planning Grant Program.¹¹

The province is also engaged with municipalities and local developers through the Finance Review Committee, which meets regularly to discuss research directions and important issues impacting capital costs for municipalities. City Hall has committed to annual reviews of the bylaw, which officials say are useful in order to evaluate fluctuating land and construction costs. Public meetings are held regularly to discuss the DCC bylaw with citizens and the development community (Paul Macklem, personal communication).

The BC Ministry of Community Services assists municipalities using DCCs by publishing the Development Finance Best Practices Guide. The guide is currently being updated to encourage green development in its 2007/08 edition following the province's launch of a comprehensive plan to reduce greenhouse gas emissions (GHGs) (Scott Coe, personal communication). Under the plan, municipalities will be given the power to waive development cost charges as a way to encourage green developments, small unit housing and small lot subdivisions (Government of British Columbia, n.d.). Kelowna has already promised to work with the province on a pilot project to develop a system for allowing green DCC exemptions (Paul Macklem, personal communication).

Financial Aspects

Revenue from DCCs is linked to the amount of new development in the city and therefore

varies considerably over time. Also annual expenditures from the DCC funds vary according to the capital works needed that year. Table 4 shows DCC revenue and expenditures for the last three years.

Table 4: Total Revenues from DCCs 2004-2006

Year	DCC revenue	DCC reserve expenditures
2006	13.9 million	27 million
2005	22.2 million	18 million
2004	19.0 million	8 million

Source: City of Kelowna Department of Financial Services, 2007

Modifying the DCC regime to include the gradient system cost \$17,000 in consulting fees. The Director of Financial Services at the City of Kelowna estimates that the DCC program requires the equivalent of at least two full-time employees. This staff time includes a full-time DCC accountant as well as some administrative commitment from the Financial Planning Manager and the Director of Financial Services. There are also various administrative roles within the City's water, roads, sewer and parks departments responsible for collecting and managing the DCCs.

Outcomes

Kelowna's DCC strategy is guided by its OCP commitment to increasing mixed-use and higher density development while reducing infrastructure costs. It is widely believed that Kelowna's DCC program has helped stimulate the development of the city's central core. In terms of outcomes, many new units are being built in the city centre where residents expect to benefit from good-quality transportation services and a generally higher quality of life. According to the City, creative new development designs focused on a high quality of life are encouraging people to move into multiple-unit buildings, leading to more cost-efficient infrastructure development. Upward pressure on housing prices is also pushing developers to build smaller units (Paul Macklem, personal

¹¹ For more information on the Smart Development Partnership Program and the Infrastructure Planning Grant Program, consult the following websites:

http://www.cserv.gov.bc.ca/lgd/intergov_relations/smart_development/index.htm
http://www.cserv.gov.bc.ca/lgd/infra/infrastructure_grants.htm#grant



communication). This confluence of factors makes it difficult for city officials to attribute specific outcomes to the DCC program, but they believe it is helping to achieve smart growth goals.

Assessment

Conventional DCC bylaws do not necessarily take into account how density and location of development affect infrastructure costs. In municipalities with conventionally configured charges, developments located in higher density, more-easily serviced locations may be subsidizing lower-density, dispersed developments. The strength of Kelowna's program therefore lies in its two-pronged approach of targeting developments that are both further from existing infrastructure and that are at lower densities.

Kelowna's sector DCCs and density gradient are seen by local and provincial authorities as an effective model for funding infrastructure development and reducing the financial burden of growth-related infrastructure by pushing growth into more cost-effective sectors and encouraging higher densities.

The DCC system is also seen as useful in minimizing financial risks on capital expenditures as analysis used in configuring charge levels is also used to help ensure that major infrastructure projects are only undertaken when there is reasonable demand. For instance arterial upgrades are constructed only at pre-set "trigger points" as determined by the Transportation Division.

City officials are reluctant, however, to attribute the shift towards city centre development and the trends towards multiple-unit housing entirely to the DCC regime. They claim that in addition to the financial incentives for infill development from the charges, developers have also reacted to significant housing market pressures to build smaller more affordable units. The enormous influx of new residents over the past decade as well as an ageing population has put a tremendous upward pressure on housing costs throughout the city and stimulated the demand for smaller, lower-cost units.

According to Randy Sher, a developer with the Mission Group, the impact of sector DCCs on development decisions has been modest. Sher notes that in order to become a more effective tool, the density gradient ought to be upgraded to take into account house sizes, as in Kelowna's current DCC regime for commercial, industrial and institutional buildings. The BC DCC Best Practices Guide also recommends charges based on housing size, citing a 1995 UDI report in cooperation with the District of Maple Ridge, which argues that DCCs based on the size of the dwelling unit encourage the construction of smaller homes.

The apparent lack of low-end affordable housing options in Kelowna is also posing some important challenges to the objectives of the program. According to the Okanagan Advocacy and Resource Society, the City has been slow to support affordable housing development in the central core as a means of mitigating the upward pressure on local housing prices.

Figure 1 : Kelowna DCC Sector Roadway Plan



Source: City of Kelowna Department of Financial Services, 2007

The factors that have contributed to the success of Kelowna's DCC program in integrated financing and Smart Growth goals are:

- A mixture of geographic, density and area-based charges to reflect infrastructure costs.
- Regulatory, financial and logistical support from the provincial Ministry of Community Services.
- Linkages with the city's long-term Official Community Plan (OCP), which emphasis Smart Growth principles.
- A good public consultation program that allows the City to adjust rates and rules to reflect market trends.

The factors that have posed challenges or that act as barriers to a more effective integration of financing and Smart Growth goals are as follows:

- Greater reliance on floor area instead of development densities would help the density gradient encourage infill and improve affordability.
- Urban sprawl outside the city's jurisdiction, particularly in adjacent communities on the west side of Okanagan Lake.
- Inadequate affordable housing programs to mitigate the effect of population pressures on the housing market.

Other Jurisdictions and Transferability

Other municipalities in BC use DCCs similar to Kelowna's, but few combine both sectoral and density gradient feature. Nanaimo, Surrey and Parkville all have sectoral DCCs but they don't differential the charges by the density of development. Abbotsford is one of the few municipalities in BC that varies single family charges by density, i.e., units per acre (Coriolis Consulting, 2003).

Outside of BC, the sectoral system is used by several cities in Ontario (where the approach is called area-specific development charges), including Markham, Barrie, Region of Durham, Woodstock, and Richmond Hill. Other cities have reduced or eliminated development charges in areas designated

for development. For example, the City of Ottawa, has been waiving development charges since 1994 in downtown areas

>>...the City of Ottawa...has been waiving development charges since 1994 in downtown areas in order to encourage densification.

in order to encourage densification. A similar policy has been in place since 1996 in the City of Cambridge.

There seem to be few if any barriers to implementing sector- and density-based DCCs in other urban areas across Canada.

The key

requirement is provincial legislation enabling municipalities to impose DCCs. Besides BC, DCCs are currently allowed in Alberta, BC, Ontario, Nova Scotia and Saskatchewan. Quebec is presently considering DCC-enabling legislation.

In the US, DCCs (known as impact fees) are widely used to raise funds for off-site infrastructure. Transportation Impact Fees (IFs) are a type of impact fee that is used specifically to pay for off-site improvements to existing transportation infrastructure to accommodate higher travel demand as a result of new development. Transportation IFs are usually charged on a per lot basis and the fees vary according to the land use on the given lot. Transportation IFs are often significantly lower in central locations, well-served by existing transit service and pedestrian and cycling facilities, as compared to peripheral locations. Fees also vary according to density: for residential developments, the cost per unit declines as the number of units per area increases; similarly, for commercial uses costs per square foot decline as FAR (floor to area ratio) increases. For each type of land use recognized by the given city, fees are calculated according to a complex formula that determines the cost of the transportation infrastructure improvements needed to accommodate the additional traffic volume generated by the given land use.

Transportation IFS of this type are in place in Orlando, Florida, and several jurisdictions in Oregon, Washington, and California (Municipal Research and Service Centre of Washington, undated).

Resources

INTERVIEWEES

Coe, Scott
Planning Systems Analyst
Ministry of Community Services
Intergovernmental Relations and
Planning Division
(250) 356-0283
scott.Coe@gov.bc.ca

Eichler, Theresa
Community Development Manager
City of Kelowna
(250) 862-3339 x 8633

Macklem, Paul
City of Kelowna
Director of Financial Services
(250) 469-8571
pmacklem@kelowna.ca

Sher, Randy
Principal
Mission Group
(250) 448-8810

Wunderlich, Jim
City of Kelowna
Financial Analyst
(250) 469-8545
jwunderlich@kelowna.ca



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WEB RESOURCES

City of Kelowna BC
<http://www.city.kelowna.bc.ca/>

Development Cost Charge Bylaw
<http://www.kelowna.ca/CM/Page70.aspx>

BC Department of Community Services
<http://www.gov.bc.ca/cservlet/>

BC Premier's Office
<http://www.gov.bc.ca/premier/index.html>

Labour Force Activity by Selected B.C. Cities
<http://www.bcstats.gov.bc.ca/DATA/dd/handout/lfcity.pdf>

A-3 Parking Site Tax, Vancouver, BC

Summary

Implemented by TransLink in January 2006 after two years of analysis and public consultation, the TransLink Parking Site Tax is applied to non-residential parking areas at the rate of \$0.78 per square metre. With over 40,000 properties and 25,500,000 square metres of parking area in the region, the tax generates approximately \$20 million in gross annual revenues, or 4 percent of TransLink's annual budget. This revenue complements user pay fees, property taxes and other levies that are allocated directly to TransLink's transit, cycling and major road network throughout the region. In turn, this supports Metro Vancouver's Livable Region Strategic (growth management) Plan.

Despite extensive consultations before and after implementation of the Parking Site Tax, the Canadian Federation of Independent Business joined forces with the Park The Tax Coalition to represent over 23,000 businesses and associations opposed to it. Their campaign and 800 appeals tested but did not preempt the legal application of the tax nor the resolve of the Provincial Minister of Transportation, local politicians and the TransLink Board. However, the Parking Site Tax, which was unique in Canada, will be repealed in January 2008 as a result of a new provincial government bill (Bill 43) that will also re-structure TransLink itself.

Background

Metro Vancouver (MV) encompasses an area of 2,844 square kilometres in the southwest corner of British Columbia. It is comprised of 21 municipalities stretching from Lions Bay in the northwest to the Township of Langley in the southeast. For the fifth consecutive year, Vancouver was ranked as the world's most livable city in 2007. The ranking considers stability, health care, culture and environment, education and infrastructure (Vancouver Sun, 2007).

MV has a population of almost 2.4 million people and this number is expected to grow to 3.4 million by 2031 (TransLink Governance Review Panel, 2007). In 2006, the region had the 11th fastest growing population in Canada with an annual population growth rate of 5.3 percent. Although this growth rate is down substantially from 14.3 percent a decade earlier, MV has continued to maintain 51 percent of the provincial population of 4.1 million (City of Vancouver, 2007).

Since 2002, BC's provincial economy and that of Metro Vancouver has been very strong when compared to the rest of Canada. Provincial GDP has averaged 3.66 percent compared to the Canadian average of 2.72 percent (BC Stats, 2007). Contributing over half the province's GDP, MV's GDP stands at approximately \$100 billion annually and the economy is projected to average 4 percent growth annually, from 2006 to 2010 (VEDC and VBT, 2002). The MV workforce is comprised of 1.2 million people, 1.1 million of which are employed. Over the last five years, the workforce growth rate has been almost 12 percent. From 2008 to 2010, the Credit Union Central of BC forecasts unemployment will be just above 3 percent, compared to 4.6 percent for the first six months of 2006 (TransLink Governance Review Panel, 2007).

The Greater Vancouver Transportation Authority (GVTA), also known as TransLink, was created in 1998 through the Provincial Government's GVTA Act.¹⁵ As a result, many Provincial transportation planning and funding/taxing responsibilities associated with MV's transit, ferry and major road network were assumed by TransLink. Capital and operating projects are funded primarily by transit fares, fuel taxes, property taxes, vehicle levies and parking taxes (Transport Canada, 2006). TransLink decisions are made by 15 board members (elected representatives), 12 of whom are appointed by MV and three appointed by the Province. Since December 2000, the province has not

15 In 2007, the Provincial government tabled Bill 43 which listed several amendments to the GVTA Act. Amongst other things, the amendments will substantially change TransLink's governance structure, regional representation, and funding framework. The latter will lead to the elimination of the parking site tax. According to the Liberal government, rescinding the tax "will save taxpayers about \$3 million per year in administration costs alone; and enable the GVTA to replenish the revenues through a property tax specific to business, commercial and industrial properties." Bill 43 has been opposed by opposition politicians who see it as a mechanism to return power to the provincial government (www.leg.bc.ca/hansard/38th3rd/H71025p.htm) The 2008 "bridge plan" can be seen at www.MV.bc.ca/board/agendas/MV/july20/E2.1.pdf

appointed directors to the Board, which has left it with only the 12 MV-appointed representatives (TransLink, n.d.).

MV's Livable Region Strategic Plan (1996 - present) and the Sustainable Region Initiative (2001- present) support the integration of land use and transportation planning in order to reduce urban sprawl. In the mid-1990s (and prior to the formation of TransLink), the Province and MV jointly created Transport 2021, a long-range transportation plan which supported MV's Livable Region Strategic Plan by focusing on three interlocking elements: managing land use, managing transportation demand and managing transportation supply.

Based on the Transport 2021 strategy, TransLink's 10-year Outlook, 3-Year Plan (\$2 billion during 2005-2007) and Annual Transportation Plan each provide varying degrees of detail pertaining to transportation infrastructure, transportation demand management priorities and related revenue, operating and capital cost projections (TransLink, n.d. b). Thousands of people across the region were consulted on and eventually supported both TransLink's projects and the means by which they would be funded (TransLink, 2005). While existing sources (property tax rates, transit fares, fuel taxes) could pay for existing operations, they would not be sufficient to fund expanded services. Thus, to move forward with the 3-Year Plan and 10-year Outlook, TransLink required innovative approaches to pay for the new services and infrastructure.

The GVTA Act gave TransLink the authority to raise money by implementing two types of parking taxes: an "ad valorem" tax (AVT) – ranging from 7 to 21 percent – on paid parking, and a parking site tax (parking ST) assessed only on non-residential parking lots on the basis of either the number of parking spaces or surface area devoted to parking. Since 1999, TransLink has collected 7% on the AVT tax. While there was consideration to increase this tax, the parking ST was chosen instead. This is because the increased AVT would have been applied only to locations with paid parking, i.e., mostly in the core business district.

As a result, it was felt that this approach could hurt the downtown and encourage businesses to move to suburban locations, where most parking is free.¹⁶ The Cities of Vancouver, Burnaby and White Rock – being those with the most paid parking – lobbied TransLink especially hard for the parking ST (Paul Barlow, personal communication). They and other supporters of the parking ST argued that all businesses benefit from an efficient transportation system, so all should share the costs of providing one. Further, since "traffic congestion is the number one threat" to Vancouver's economy, air quality and quality of life, all citizens would gain from the TransLink plan (TransLink, 2005). While smart growth has been a goal of the regional transportation plans, it did not play a role in the decision to adopt the parking ST. The business community lobbied hard against adoption of either the AVT or parking ST, arguing that it was a new tax that unfairly penalized the commercial sector. Nonetheless, the parking ST was approved by the TransLink Board in February 2004 (Paul Barlow, personal communication).

Description of the Instrument

Since there were no precedents for the parking ST in Canada, TransLink was given the responsibility of creating a legally defensible tax that was equitable (in terms of property size and municipal share) and would ensure compliance. After deciding on exemptions (e.g., parking lots on farms, utilities, government land, churches, schools), the next step was to investigate exactly how much non-residential parking existed in MV. BC Assessment (an independent, provincial Crown corporation that assesses property taxes), was contracted and, using aerial photography, digital mapping, municipal records and site visits, created an inventory of 40,000 properties representing 25,500,000 square metres of commercial parking space (BC Assessment, n.d.).

In designing the tax, TransLink had to decide whether to implement the tax by surface area or by parking stall. The latter did not meet the equity/compliance criteria since property owners often had gravel parking lots with

16 A recent Collier's International study of parking rates across Canada reveals that Vancouver has "bargain-basement prices" compared to Calgary, Toronto, and Montreal. Whereas average reserved parking is \$475, \$421.80 and \$414.04 respectively in these cities, Vancouver is at \$305.10. Prices decrease for unreserved monthly parking but Vancouver remains the lowest at \$209.05 while Calgary is at \$350, Toronto at \$301.85 and Montreal at \$262.09 (Ford, 2007).

no markings or could re-distribute the size of existing parking stalls. Subsequently, the decision was made to apply the parking ST inclusive of any area “used, available or designed” for parking and “related or ancillary to that parking” (e.g., driveways, ramps and turning areas) (TransLink, n.d. c). By applying the tax to a greater parking area, the actual per square metre rate required to meet the \$25 million annual revenue target (set by the TransLink board) could be decreased. When the parking ST commenced in January 2006, the rate was imposed at \$1.02 per square metre in December 2005 to meet the \$25 million projected funding requirement. However, it was subsequently reduced to \$0.78 in April 2006 when the funding requirement was reduced to \$20 million due to higher than expected revenue from transit fares and property taxes (Paul Barlow, personal communication).

Administrative Aspects

TransLink designed an administrative process to answer potential questions and grievances resulting from the introduction of the new tax. It included a website, printed brochures and installed an 800 telephone number. By having one group handle all facets of parking ST implementation, consistency was ensured when handling complaints. For more difficult objections, the two-tiered provincial appeals process was used through the BC Assessment Authority Act. This process, which parallels the property assessment process, provides property owners with 30 days to request a review of the assessed parking site by the Property Assessment Review Panel. If the appellant disagrees with the Panel's decision, the appellant can appeal again to the Property Assessment Appeals Board (Paul Barlow, personal communication).

Financial Aspects

In 2004, the TransLink Board decided that the parking ST would have to generate \$25 million annually (4 percent of annual budget) to help pay for the 3-Year Transportation Plan. However, due to higher than anticipated revenue from other sources (particularly from property tax and transit fare revenues), complementary

federal funding (the New Deal for Cities and Program) and a final version of the parking ST tax roll, the Board decided to reduce revenues from the parking ST to \$20 million. As a result, the initial parking ST rate of \$1.02 per square metre was decreased to \$0.78 in April 2006 (TransLink, 2006).

As an example, Metrotown Core (Metropolis at Metrotown, Metrotown Centre, and Station Square) is a 2,000,000 square meter commercial and retail complex valued at \$30 million. It has 400,000 square meters of surface parking area which results in a \$300,000 yearly parking ST payment (Paul Barlow, personal communication).

In order to pay staff and contractors, draft parking ST legislation, make business decisions, create the tax role, carry out consultations, implement the tax and deal with 800 appeals, TransLink spent almost \$6 million between 2004 and 2006. Expenditures are forecast to be \$2 million in 2007 as final appeals are taken care of and \$1 million in subsequent years to maintain the system (Paul Barlow, personal communication).

Outcomes

By providing transportation choices through improved transit and cycling, TransLink supports the Livable Region Strategic Plan and, therefore, smart growth. However, while the \$20 million raised by the parking ST was leveraged to help meet TransLink objectives (e.g. leverage dollars for bus purchases), “on its own it probably didn't have any impact on smart growth development” due to the small amount of the total TransLink budget it represents. As well, companies such as Wal-Mart were not going to reduce the size of their parking lots to decrease the amount of parking ST owing opting to absorb or pass on the cost to their customers (Paul Barlow, personal communication).

Monies generated by the parking ST are allocated to a general fund that helps fund TransLink's \$2 billion 3-transportation plan. Funds are not allocated to any specific activity but do help leverage funds for activities that would not be implemented without it (Paul Barlow, personal communication).

Although TransLink has yet to study whether the parking ST had an impact on parking supply, most companies chose to absorb the new tax. For example, large retailers such as Wal-Mart were not going to reduce the size of their parking lots to save a relatively small amount of tax; providing free parking to their customers far outweighed the new expenditure. What was discovered was that the parking ST gave mainly non-retail property owners an incentive to become much more efficient in using their parking space for its designated use. Whereas businesses would, for example, use storage space to park vehicles prior to parking ST assessment, after assessment they used storage space for storage and the parking space for parking to avoid the tax (Paul Barlow, personal communication).

Assessment

Without precedent in Canada, TransLink delivered a “legislatively sound” and “hard to dispute” parking site tax for 21 municipalities, each of which had its own parking by-laws. They created a new tax role, calculation methodology and consultation process in two years. Out of the 40,000 properties assessed, over 7,500 property owners requested a Property Assessment Review Panel hearing, 800 of which were appealed to the Property Assessment Appeals Board. Most of these related to the definition of property parking areas. With the imminent passing of Bill 43 and expected repeal of the parking ST, further funds will not be spent defending the few cases that remain outstanding (Paul Barlow, personal communication).

Although TransLink designed the parking ST to be an effective, consistent and equitable way to raise funds for transit, cycling paths and roads, some stakeholders were vehemently against it. The most organized opponents were the Canadian Federation of Independent Businesses (CFIB) and Park The Tax Coalition (PTTC). Together, they represented more than 23,000 businesses (Park the Tax Coalition, n.d.), many of which were owned by corporations based elsewhere in Canada. These corporations joined the PTTC campaign to, in part, ensure that the parking ST did not set a precedent that could be instituted

in other cities across Canada (Paul Barlow, personal communication). They claimed that the parking ST was “a bad tax” because:

- it was a hidden tax in that landlords could pass the tax on to tenants whose only choice was to absorb the tax or pass it on to consumers in the form of higher prices
- it amounted to a double tax (paying property tax on value of land and paying parking ST on the property’s parking area)
- it was inequitable as it was “narrowly” applied to the commercial sector, with those that provide parking “hit the hardest” and those who relied on street parking affected the least
- the tax was being applied to ancillary areas (such as driveways) not used for parking (Ted Williams, personal communication; Park the Tax Coalition, n.d. b)
- municipalities were using zoning bylaws to set minimum commercial parking supply requirements and then TransLink was unfairly taxing the amount of parking provided.¹⁷

Both the TransLink Board and the Provincial Minister of Transportation (which had provided TransLink with the authority to implement the parking ST through the GVTA Act) received many thousands of letters and protest faxes. As a result, meetings with business representatives were held in 2006 to find alternatives to the parking ST but none that fell within TransLink’s authority were found (fuel taxes or federal money were often suggested as substitutes) (Paul Barlow, personal communication).

Better Environmentally Sustainable Transportation (BEST), a non-profit organization that promotes sustainable transportation policies and programs, believes that the parking ST should have been promoted and applied as part of a Transportation Demand Management package. By increasing parking rates in the context of other measures, such as reducing the number of parking stalls, commuters would have a stronger incentive to choose sustainable modes (Deanne LaRoque, personal communication).

17 On average, the retail sector must provide 5 parking stalls per 1,000 square feet of Gross Leaseable Area (GLA) whereas the office and industrial sector must provide 2 parking stalls per 1,000 square feet GLA (Williams, 2007).

As is mandated under the GVTA Act, TransLink conducted extensive consultations on the parking ST proposal with special working groups representing municipalities, tax collectors, business associations, shopping center/mall owners and the trucking industry. As well, public meetings and interactive web discussions reviewed the parking ST as part of TransLink's 2005 budget process and during TransLink's 3-year plan consultations. The consultations indicated that the public supported transit, road and cycling infrastructure investments of \$2 billion from 2005-2007 and a further \$2.1 billion by 2013 (TransLink, n.d. d). As a source of revenue to help cover these expenditures, opinion polling indicated broader public support for parking charges over gas taxes (Transport Canada, 2006).

Implementing a new tax in Canada is a two-edged sword for any level of government which chooses to do so. In the case of the parking ST, there were several legal, technical, financial, consultation, educational and political factors that at once led to the successful implementation of the tax but also led to its demise.

Success factors include:

- The GVTA Act gave TransLink the legal authority to implement the parking tax.
- The majority of municipal politicians and TransLink board members provided critical leadership on the issue.
- Extensive consultation and polling was carried out to ensure maximum buy-in of TransLink's transportation plans and the funding options needed to support it.
- TransLink worked with BC Assessment to establish a consistent, equitable tax within the confines of the GVTA Act.
- A well-designed complaint/appeal process enabled TransLink to educate commercial property owners about the tax and deflect much of the anti-tax criticism from politicians

- The parking ST raised \$20 million in new revenues that were allocated directly to the citizen-approved TransLink's 3-Year Outlook plan. Designating revenue to specific infrastructure needs rather than a general revenue fund was instrumental to getting public support.

There were also major challenges with the parking ST, including:

- The GVTA Act limited TransLink to apply the parking ST only to business and industrial entities. As noted below, institutional (government, universities), residential and public (on-street) parking is exempted).
- Although most municipal politicians and TransLink board members weathered the wrath of opposition to the parking ST, the provincial government did not have the same fortitude. Having the power to give TransLink the legal authority to implement the tax, the provincial government also had the power to take it away.¹⁸
- Technical Aspects. To ensure fairness and spread the tax load amongst as many properties as possible, many technical decisions had to be determined relating to the definition of parking (what is and what isn't included), parking area/stall size, gravel/asphalt surfaces.¹⁹
- Education. Despite attempts to educate the public, many stakeholders did not understand that TransLink's parking tax was assessed independently of municipal bylaws and only applied to non-residential parking sites within the Greater Vancouver Regional District (GVRD). They were also confused as to what taxing powers TransLink had been given through the GVTA Act and, as a result, made some unrealistic demands (e.g. TransLink did not have the power to substitute the parking ST with an increase in provincial fuel taxes).

¹⁸ In 2007, the Provincial government tabled Bill 43 which listed several amendments to the GVTA Act. Amongst other things, the amendments will substantially change TransLink's governance structure, regional representation, and funding framework. The latter will lead to the elimination of the parking site tax. According to the Liberal government, rescinding the tax "will save taxpayers about \$3 million per year in administration costs alone; and enable the GVTA to replenish the revenues through a property tax specific to business, commercial and industrial properties." Bill 43 has been opposed by opposition politicians who see it as a mechanism to return power to the provincial government (www.leg.bc.ca/hansard/38th3rd/H71025p.htm) The 2008 "bridge plan" can be seen at www.MV.bc.ca/board/agendas/MV/july20/E2.1.pdf

¹⁹ Many jurisdictions which have applied area parking taxes have done so on a per stall basis (e.g. Sydney, Melbourne, Perth).



Other Jurisdictions and Transferability

Although TransLink opted to deploy across the entire region, the parking ST could be applied to specific areas or sub-regions (downtowns, Business Improvement Areas or certain neighbourhoods). Internationally, this has been done in Manchester, UK (Paul Barlow, personal communication).

Rather than apply a tax on total parking area, several Australian cities have successfully levied a commercial tax on the number of parking stalls with the intent “to encourage use of alternative modes and fund transport facilities and services” (Litman, 2006, pp. 5-6). In Canada, Montreal implemented a \$1 per stall tax in 1992 but it was subsequently eliminated in 1995. The City is now deciding whether it will re-adopt a similar tax. Montreal’s transit agency, Agence métropolitaine de transport (AMT), has had the legislative power to levy a parking tax on commercial property since it was created in 1996 but has not yet done so (Normand Parisien, personal communication).

Where provincial legislation exists, the parking ST is an innovative mechanism that could work in other jurisdictions in Canada to fund and promote transportation infrastructure (e.g. transit, cycling, TOD) and reduce car dependency. To achieve this in an equitable and efficient manner, governments must:

- apply parking taxes to all parking lots – including those owned by government²⁰ and institutions (e.g. hospitals, universities, places of worship). This will spread the burden of tax amongst more property owners.
- enable and assist property owners with non-metered parking space to install meters. This will ensure that motorists pay the parking ST negating the need for property owners (or their tenants) absorb the tax (Litman, 2006).
- eliminate minimum parking by-laws, thereby providing businesses, developers, and others with an incentive to reduce the amount of space available for parking.

- enable businesses (and others) to reduce the amount of parking space and/or introduce cash-out²¹ programs to employees.
- provide a tax rebate to property owners who increase parking rates and/or provide bicycle parking, well-cared for vegetation and impervious surfaces.
- introduce parking ST in conjunction with increased on-street parking rates.

>> Downtown Vancouver



Once the decision is made to levy a parking ST style tax, it must be carried through – no matter what the political fallout. In the case of TransLink, substantial upfront investment and energy was required but was ultimately not worth the effort since provincial politicians chose to have it repealed less than two years after it was implemented.

Resources

INTERVIEWEES

Barlow, Paul
Project Manager, Parking Site Tax
TransLink/Greater Vancouver
Transportation Authority
(604) 453-4507
paul_barlow@translink.bc.ca

Williams, Ted
Co-Chair, Park the Tax Coalition
Director, Metrotown Properties
Ivanhoe-Cambridge
(604) 630-3301
twilliam@ivanhoecambridge.com

²⁰ At the present time, lower levels of government in Canada are not permitted to tax higher levels of government and many institutions are legally exempt.

²¹ Parking Cash Out is a TDM strategy that has employers offering their employees the option of receiving taxable cash in lieu of free or subsidized parking provided by the employer. The same type of program can be extended to retail shoppers.

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A-4 Land-Value Taxation, Harrisburg, PA

Summary

Land-value taxation (LVT) is a special form of property tax. Strictly speaking, it refers to an ad-valorem tax (i.e., a tax based on value) that is only applied on land and does not take into account improvements to the land (such as buildings, landscaping, etc.). Thus, it differs markedly from most other property taxes, which generally apply to real estate (i.e., the combination of land and improvements to the land). Split rate taxation is a variant of the LVT whereby both land and improvements are taxed, but a greater weight is placed on the land portion. The use of the abbreviation "LVT" is used in this case study to refer to all types of land value taxation, including split rate taxes.

Harrisburg, the capital of Pennsylvania, has had a split rate tax since 1975, with the mill or tax rate on land set higher than the rate on improvements. The implementation of a two-tiered or split-rate tax structure in Harrisburg had two main objectives: first, it was adopted as an incentive to attract infill development and build "upward", that is to say, to use already settled land more intensively; second, it was proposed as a disincentive to land speculation, which had been rampant in the previous decades (Reed, 2003).

The mechanism of LVT is fairly simple. Taxes on buildings and other improvements are gradually reduced or eliminated, while taxes on land gradually increase to make up for the difference; in theory, then, LVT is revenue-neutral from the perspective of the City. However, even though LVT does not increase landowners' overall tax burden, this burden is distributed differently under a LVT regime. Indeed, LVT generally translates into lower taxes for most landowners and a heavier tax burden for those who use land unproductively. As a result, LVT tends to displace those uses of land that are automobile-intensive (or which require large areas of surface parking) and render land speculation more expensive and considerably more risky.

Given that the implementation of LVT in Harrisburg started more than 30 years ago, it is possible to look at some of the tangible outcomes of this policy instrument. The main outcomes include: the redevelopment of more than 3,500 lots throughout the city, the establishment of several companies and cultural institutions in downtown Harrisburg and more generally, the partial elimination of land speculation (Vincent, 2007). The City of Harrisburg also attributes the sharp decrease in unemployment and crime since the early 80s indirectly to the LVT in that it helped to revitalize the downtown and generated new economic activity.

Background

Harrisburg is a city of approximately 50,000 people in a metropolitan region of approximately 650,000. Harrisburg is the capital of Pennsylvania and the county seat of Dauphin County. It lies on the east bank of the Susquehanna River, 170 km northwest of Philadelphia.

During the 19th century, the building of the Pennsylvania Canal and later the Pennsylvania Railroad, allowed Harrisburg to become one of the most industrialized cities in the Northeastern US. However, deindustrialization in the 1960s and 1970s took a heavy toll on the city's economy, as elsewhere in the US "rustbelt". In 1982, Harrisburg was considered the second most distressed city in the nation after East St-Louis, Illinois (Reed, 2005). The city had sustained a steady decline over more than twenty years, and its population had shrunk by more than a third between 1950 and 1980, from approximately 90,000 to less than 54,000. Although the city did attract quite a bit of investment in the 1980s and 1990s, its population continued to dwindle until 1998, and the percentage of the population living under the poverty level remained at 23% (Reed, 2005). It follows that Harrisburg, although a "city on the rise," still faces major challenges.

The land value tax system has been gradually implemented in Harrisburg since 1975 in response to the pressing problems that have faced the city over the last few decades. First, it was seen as a way of addressing the city's economic decline by reducing the incentive to hold empty land (i.e., for speculative purposes) and stimulate business investment. Secondly, the city had grown to its boundaries and had little land left for outward expansion. Unable to expand by growing outwards, City leaders saw the VLT as a way to spur infill development so as to reverse the city's population decline (Reed, 2003).

Political leadership in Harrisburg was important for the adoption and gradual implementation of the split rate tax. The split-rate tax was first introduced in 1975, with a ratio of the land to building tax of 1.4:1, which means that the mill rate on land was only 40% higher than the rate on buildings/improvements. After Stephen Reed was elected Mayor of Harrisburg in 1982, LVT became an integral part of the administration's economic and land use strategy. In 1988, the ratio was increased to 3:1, in 1999 it became 4:1, and finally it was changed to 6:1 in 2002 (City of Harrisburg, 2005c), where it stands today.

There was some opposition to the gradual shift in emphasis towards taxing land, but this came mostly from owners of vacant lots and land speculators. To allow land-intensive businesses to adapt and to help attract new infill projects, the City developed a tax-abatement program for the few owners of residential and commercial properties who experienced rapid tax increases under the split-rate system. The City also provided a certain amount of flexibility in the payment of their taxes by giving landowners the option to pay in several instalments (City of Harrisburg, 2005).

Description of the Instrument

Under its split-rate tax regime, Harrisburg taxes the value of land at a higher rate than the value of buildings and other improvements. This can be seen as a compromise between pure LVT and an

ordinary property tax falling on real estate (which is made up of land value and improvement value). The main purpose of two-tiered taxation in Harrisburg was to encourage the most productive, most intensive and best use of land possible. The split tax rate system in Harrisburg aims to reward those who properly maintain or invest in buildings and other improvements, while penalizing those who "sit on land" or use land unproductively (Reed, 2003).

The mechanism behind two-tiered taxation is fairly straightforward. First, given that Harrisburg was transitioning from a single-rate real estate to a two-tiered property tax, taxes on buildings and other improvements were gradually reduced, while taxes on land were gradually increased to make up for the difference. The mill rate applied on improvements was reduced by approximately 40% the first year, and the land tax was increased enough to make up for the difference. The second year, the rate of taxation on buildings and improvements decreased further, and the loss in revenue was made up by another increase in land-tax, and so forth. It follows that LVT was revenue-neutral from the perspective of the City as it simply shifted the weight of the tax burden between land and improvements.

Administrative Aspects

The assessment of property values (both land and improvements) is carried out by the County, so the City of Harrisburg is not directly involved in valuation. However, the calculation of the tax and the mailings to property owners are carried out by Harrisburg's Department of Administration. The City Treasurer's Office then collects the property tax revenue, which goes into general revenues and is allocated for spending according to normal procedures (City of Harrisburg, 2005). The City administers the property tax for itself as well as for the local school district; it is interesting to note, however, that the school tax is still based on real estate value (where land and improvements are weighted equally).



Linkages

As stated above the main purpose of the instrument was to encourage infill development and discourage land speculation. LVT, however, was not treated as a stand-alone policy instrument – or as a panacea which would, in and of itself, solve the problem of urban decay in downtown Harrisburg. Rather, it became the keystone of an aggressive economic development strategy, which aimed not only to “fill-in” the numerous empty lots throughout the city, but also to create new non-tax revenue sources and to refine and constantly improve the operations of city government. These three objectives (real estate development, creation of revenue and good governance) are still cited as the administration’s main priorities (Reed, 2003).

As pointed out by Mayor Reed in a letter addressed to a City of Philadelphia councillor (2003), the revitalization of downtown Harrisburg would have been difficult without LVT. However, he also notes that the two-tiered tax system is not a cure-all. He warns against an economic development strategy based solely on LVT; any revitalization strategy must also comprise other incentives, such as low-interest loans, discounted municipal land offerings, and tax abatement measures all of which have been used in Harrisburg. Land-value or split rate tax systems must therefore necessarily be part of a larger policy package.

Financial Aspects

According to the proposed 2007 budget, approximately 25% of the City’s General Fund will come from property taxes, which amount to approximately 15 million dollars (City of Harrisburg, 2006). Although the relative share of property taxes in the City’s revenues has varied slightly over time, it has remained relatively stable (Kroboth, 2007). The City’s other main sources of revenue are: departmental revenues (which consist of charges to Sewer, Water and Refuse Disposal District Funds and other administrative charges collected directly by City Departments), intergovernmental revenues, business tax and income tax. The assessed value of taxable real estate in Harrisburg

increased more than 700% between 1982 and 2005, which is partly attributed to the implementation of LVT (Reed, 2005).

According to the Office of the Mayor, the costs of developing and implementing LVT (e.g., for studies, public consultations, etc.) were minimal. In fact, the only expenses incurred by the City of Harrisburg had to do with changes to the computerized billing system so as to allow the two rates (land and buildings) to be separated. This software and programming changeover took approximately one week (Reed, 2005).

As for the administration of the instrument, the shift from real estate to land value taxation did not really impose an extra burden, as the only real extra task was to explain the change to landowners, which was done in the first couple of years. It has been reported by the Office of the Mayor that the split rate tax system is cheaper to administer than other potential municipal revenue sources because much less effort is required to track land value than to assess the value of improvements or track income, deductions, capital gains, sales transactions, etc. (Leppo, 2007).

The instrument, therefore, may result in some administrative costs savings to the municipality, but its main economic advantage is that it encourages real estate development and, ipso facto, increases tax revenues. In Harrisburg alone, there was an eight-fold increase in the total value of real estate between 1982 and 2003, which translated into increased financial capacity for the municipal government. Moreover, according to the Office of the Mayor, the two-tiered tax system has resulted in lower taxes for approximately 90% of landowners (all except those landowners with large properties), so the change effectively contributed to reduce the cost of living in Harrisburg relative to cities with a single-rate tax system (among which are the suburban municipalities outside of the city), since most landowners benefited from a reduction in taxes. According to City officials (Leppo, 2007; Kroboth, 2007), this reduction in taxes for small landowners resulted from the sharp increase in taxation borne by owners of large vacant lots in the downtown area.

Outcomes

>> Harrisburg skyline



As mentioned earlier, the implementation of a two-tiered tax system in Harrisburg was a response to the city's economic decay and rampant land speculation. Although it is difficult to know exactly how much credit to attribute to the LVT, there is general agreement that these two objectives have been reached (at least in part), and that the two-tiered tax system has contributed to this success.

First, in term of attracting investment in Harrisburg, the split rate tax system proved tremendously successful: according the City of Harrisburg (2003), the number of empty sites and vacant structures in the city has decreased by approximately 85% since 1982, from approximately 4,200 to less than 500 today. Moreover, it is estimated that at least 300 residential infill projects have taken place to date (Leppo, 2007).

Although the split rate tax system was adopted in the mid-1970s, the majority of large development projects were not launched until the last decade (Leppo, 2007). Since 2000, Harrisburg has issued more than 32,000 building permits, representing over \$3.86 billion in new investment (Reed, 2005). Specific examples of recent buildings and projects thought to have been facilitated by LVT include: several office towers, approximately 20 new restaurants in the downtown area, two new hotels, a new university (the Harrisburg University of Science and Technology) also in downtown and a number of cultural institutions (including the new Pennsylvania National Fire Museum, The Whitaker Center for

Science and the Arts, the Danzante Cultural Center, The National Civil War Museum, The Susquehanna Art Museum, The Olewine Nature Center and the upgrades at the State Museum), many of which are located in – or close to – the central business district.

There is also evidence that downtown Harrisburg is attracting new economic activity; in the last 5 years, for instance, several important companies have decided to relocate, to establish themselves or to expand their activities in downtown Harrisburg, including Pinnacle Health Systems, Life Science Greenhouses, Advanced Communications and Belco Community Credit Union (Reed, 2005).

The split rate tax is credited by some for encouraging infill and brownfield development and for limiting the extent of urban sprawl. Stephen Reed, Mayor of Harrisburg, has affirmed that the land tax is responsible for sparing the suburban farmland outside of the city from development by encouraging the intensification of the existing urban fabric (cited in Wetzel, 2004).

Another indirect effect of two-tiered taxation in Harrisburg has been the benefit that accrues to lower-income homeowners and small business owners, who can more easily afford to maintain and invest in their property knowing that it will not increase their tax burden (Vincent, 2007). Although LVT did not increase landowners' overall tax burden, this burden is now distributed differently under a split-rate (or land-value) tax regime. Indeed, LVT generally translates into lower taxes for most landowners, and a heavier tax burden for those who use land unproductively or simply withhold it from development. As a result, the two-tiered tax regime has tended to displace those uses of land that were automobile-intensive (or which required large areas of surface parking) and made land speculation more difficult by increasing the cost of vacancy. Concomitantly, the two-tiered system has attracted investment by taxing improvements less and less. As pointed out by Mayor Reed, LVT is – effectively – a reward for initiative and private investment risk (Reed, 2003).

To recapitulate, then, two-tiered taxation in Harrisburg has:

- encouraged infill and high-density development in high-amenity locations
- encouraged landowners to maintain and invest in their property
- discouraged land speculation as well as low-density uses of land
- allowed the City to recoup more of the value that it helped create by investing in infrastructure
- reduced the tax burden of most medium and small landowners, and has tended to keep rents down, thereby contributing to overall housing affordability.

Assessment

Based on the literature and several documents released by the City of Harrisburg, it is apparent that two-tiered taxation was both effective and innovative. First, it profoundly changed the prevalent perverse incentive structure embedded in land development by increasing the costs of – and ipso facto the risks associated with – speculation. Conversely, it also decreased the costs of – and risks associated with – investment. The different stakeholders that were interviewed all agree that this was probably the most important effect of LVT in Harrisburg; by taxing land more heavily than improvements, it is said, LVT punished landowners who were using land unproductively, while rewarding those who made improvements on land (Vincent, 2007). In sum, LVT is said to reward productivity and investment, in contrast to the single tax rate system which penalizes both (Reed, 2005).

Second, the new tax system in Harrisburg addressed an important problem of urban development, which is the fact that private landowners and developers benefit from public improvements on land. This gives rise to what Ebenezer Howard called the “unearned increment”, i.e., the increase in property values borne by landowners who have not participated in improving nearby infrastructure, yet benefit directly from their improvement. Indeed, increases in land values are often the result of re-zoning or the

creation of public infrastructure, yet they are not shared by all of society. The two-tiered taxation system in Harrisburg has provided a mechanism through which the City was able to recuperate more of this “unearned increment”, encouraging further investment in – and maintenance of – infrastructure. As noted by Wetzel, the tax also works to compensate landowners whose property is negatively affected by a development with a negative impact on land values. Indeed, if such a development was to occur near one’s property, one would be compensated by a more substantial reduction of the tax on the property than would occur with real estate value taxation (Wetzel, 2004).

There was general agreement among the stakeholders interviewed – whether they were from the municipality, the development side or independent observers – that the instrument does encourage Smart Growth outcomes such as densification in the downtown area and infill development throughout the city. Furthermore, the interviewees did not feel that the shift to two-tiered taxation put an undue burden on anyone, given that the main losers were landowners who used land unproductively or withheld it from development (Hartzler, 2007; Leppo, 2007; Vincent 2007). One of the interviewees reported that there is now some opposition to the abatement program, as some feel that the City is foregoing a significant portion of its revenues; however, he also explained that many developments would not have happened if the abatement program had not been in place (Leppo, 2007). Therefore, it appears from the interviews that the “package” of incentives put in place along with two-tiered taxation does work.

Two of the interviewees mentioned that the split rate tax system would have more impact if it were applied to the school district real estate tax as well. At present, the State of Pennsylvania does not allow School Districts to tax land and improvements differentially. However, according to Vincent (2007), there is a good chance that the State might allow this in the near future. Otherwise, it should be noted that a broader property tax reform is being considered at the State level, which would change the overall framework within

which cities like Harrisburg are functioning (City of Harrisburg, 2005).

Another point to consider is that the split rate tax regime is theoretically a transition from real estate value taxation to land taxation. Indeed, the ratio of land-tax to building-tax has increased four-fold since 1975, and might further increase if it is deemed desirable. It is possible that the City might gradually phase out the building and improvement tax completely while making up the loss in revenue by an increase in the land tax. However, according to the City Planning Bureau chief, there is a consensus that the 6 to 1 ratio is a good one, so that a complete shift to LVT is unlikely in the near future (Leppo, 2007).

Lastly, it has been argued by some that site value assessment (i.e., the valuation of land separately from buildings) is necessarily more difficult than traditional property assessment as the appraiser is required to “break down” the market value into two separate categories, which is not necessarily easy (Kitchen, 2007). It is also possible that landowners will find appraisers who are known to value improvements more than land to try and contest the County’s (or the City’s) assessment. However, according to Cord (2007), there is no evidence that land assessment has been a problem in those localities that have adopted LVT or split-rate taxation.

A number of factors likely to facilitate the implementation of LVT and challenges likely to retard or derail the process were identified by the interviewees. The main success factors are:

- A slow and gradual implementation so as to allow landowners and businesses to adapt;
- An effective communications strategy to explain to citizens and business owners the benefits of LVT, and;
- The application of LVT to all real estate taxes in a given locality so as to maximize the impact of the instrument.
- The main challenges to the successful implementation of a Split Rate of Land-Value tax system are:

- Making sure that no undue burden is put on the most disadvantaged segment of society and concomitantly to avoid widespread gentrification;
- Educating people to eventually change their way of thinking, especially in places where density is seen in a negative light, and;
- Deciding what level of taxation is appropriate given the economic and social context of a place, and deciding how quickly or slowly the transition from one system to the other should occur.

Other issues, not directly related to implementation, also come up when trying to establish a two-tiered tax system, or when assessing the efficacy of a two-tiered system already in place. First, some have argued that a two-tiered system may accelerate development without necessarily encouraging more productive uses of land; in other words, some of the development propelled by a two-tiered system may not be appropriate or timely.

Second, as far as assessing the efficacy of an existing two-tiered system, it may not be sufficient to assess the quantity or quality of development. Indeed, it is not surprising that people respond to a change in the price ratio between land and improvement, but the question still remains – is this the proper role for property taxes? This and other questions are discussed in some length by Bird and Slack (2002).

Other Jurisdictions and Transferability

Harrisburg was among the first jurisdictions to implement LVT, but other municipalities in Pennsylvania and elsewhere have also experimented with the instrument. In fact, many cities have gone this route, including Melbourne and Sydney in Australia, Johannesburg in South Africa, Kingstown in Jamaica and several cities in British Columbia, Alberta and Saskatchewan. It should be noted, however, that the success of LVT is not unequivocal. In fact, according to Bird and Slack, LVT has actually been decreasing in importance as a tax base around the world (2002).

According to a recent article published by the Henry George Institute, 54 out of 104 municipalities in British Columbia exempt 50% of the value of improvements and 13 exempt more than 50% of the value of improvements. In Alberta, the province requires its 7 cities to exempt 40% of the value of improvements from taxation, while in Saskatchewan, all but one of the cities and towns also exempt improvement values by 40%. In Manitoba, finally, cities and towns exempt approximately a third of the value of improvements (Henry George Institute, 2007). It is interesting to note that the tax reform proposed by Glen Murray when he was Mayor of Winnipeg, which included a shift from real estate to land taxation, did not survive his departure from office to run for the Liberal Party.

In 1957, Jamaica converted its real estate tax into a pure form of LVT, following the 1944 recommendations of the Commission on Inquiry and the International Bank for Reconstruction and Development. Naturally, since LVT was applied to an entire country, agricultural areas benefited from a substantial reduction in the mill rate. The rationale behind the implementation of a strict LVT was that such a "tax increases with the value which the community as a whole has put into the land--therefore it is only fair that if there should be any increase in taxes, it should fall where the increase in value occurs--not from the labor of man on the land, but from the value put into the land by the community" (Manley, cited in Copes & Rybeck, 2000, p.1). Another reason mentioned by Copes & Rybeck was that the split-rate tax system was likely to discourage the withholding of land from use, and to encourage the putting of land to use. In other words, the intent in this case was to capture the "unearned increment" (or the increase in real estate values) resulting from public investment in land and to curb land speculation. However, as reported by local officials, neither objectives were achieved. Indeed, the land-value tax in Jamaica did not have the intended effects because it was too low; in other words, it did not significantly affect the decisions of landowners. As a result, the tax did not increase the financial capacity of municipalities, nor did it put an end to land speculation (Copes & Rybeck, 2000).

Australia has had a long experience with LVT. As a matter of fact, revenue from dealings involving land, inspired by the old British system, was an important part of the consolidated revenues of colonial governments the earliest days of white settlement in Australia. By 1915, land values were the main source of public revenue for all the Australian States as well as for the Federal Government of Australia and that of New Zealand. The tax system has changed over time, but LVT still represents a significant source of government revenue in Australia. In fact, all six states and a majority of municipalities nationwide tax land values to a certain degree, and some exempt improvements in whole or in part. In the municipalities and localities of New South Wales, for example, all taxation is based on land-values. Over time, this revenue base became known as the "Unimproved Capital Value of land", which in the late 1980s was used for virtually all rate levies by approximately 70% of Australia's local authorities, controlling about 95% of the rateable area of the entire country (Herps, 1988). Although the system has worked relatively well in most places, it became less and less politically acceptable in recent decades as an increasing number of jurisdictions started to impose higher rates on larger landholdings, while granting tax exemptions to various sectional interests, thereby reducing the revenue base of local taxing units and increasing the pressure on commercial and industrial property owners. As a result of the apparent entrenched inequity in the system, it is reported that the land-value tax approach has become increasingly unpopular, and there have been pleas in several jurisdictions to abolish it altogether. In fact, the Liberal Party's shadow treasurer has even suggested recently that land tax on rental properties could be abolished if his party was elected (see for example Stanhope, 2006 to read about this debate).

The City of Pittsburgh, Pennsylvania, introduced the two-tiered tax system in 1913; Pittsburgh's tax on land was about 5.77 times the tax on improvements, which is comparable to the ratio that is in effect in Harrisburg. However, the split-rate tax system was abandoned in 2001, following a drastic

increase in assessed land values. This sudden increase was not a result of any failing in the LVT system per se, but rather, the consequence of an ineffective property assessment system which underestimated property values for many years. In the end, the system was abandoned in favor of the traditional single-rate property tax. Interestingly, the transition back to a single-rate system further increased the tax burden of most landowners – all except large landowners making unproductive use of their land (Vincent, 2007). It is also interesting to note that despite the changeover in 2001, the Pittsburgh Improvement District still employs a pure LVT as a surcharge on the regular property tax.

In the United States, municipalities do not have the prima facie right to “split” the real estate tax into a land-tax and a building-tax; State legislation is required in order to enable cities in this way. Likewise, Canadian municipalities do not have the right to adopt a split-rate or land-value tax system unless they are enabled to do so by the Province. This has been done in British Columbia, Alberta and Saskatchewan and, as we have seen, cities in those provinces have already applied LVT, with varying results. In principle, there is nothing preventing other provinces in Canada from adopting enabling legislation.

A formal proposition to gradually eliminate taxes on buildings and improvements was put forward by Paul Hellyer, a minister under Trudeau, in the report of his Task Force on Housing and Urban Development in 1969, and has since been validated and taken up by several commissions in Canada (CRCT, 2000). Concomitantly, there is also an increasing awareness among urbanists, politicians and developers in Canada that the traditional single-rate tax system is detrimental to our cities (Roberts, 2005; Steed, 2005). However, the overall trend in Canada is towards a single-tax system, and away from LVT (Nixon, 2000).

It should also be remembered, when discussing the transferability of LVT to Canada, that the way municipalities raise revenue in the US is quite different from that in Canada; in Harrisburg, for instance, only 23% of the City's General Fund Budget is funded through property taxes (City of Harrisburg, 2005a). It

follows that a transition to LVT in Canada – where property taxes make up a much higher proportion of municipal revenues – would have to be more gradual.

Resources

INTERVIEWEES

Cord, Steven
Director of the Center for Land Value Taxation
Columbia, MD
stevencord2000@yahoo.com

Hartzler, Alex
Principal, WCI Partners Inc.
(717) 421-0143
ahartzler@wcipartners.com

Kroboth, Robert
City of Harrisburg,
Deputy Business Administrator
(717) 255-6636
rkroboth@cityofhbg.com

Leppo, Dan
Planning Bureau Chief, City of Harrisburg
(717) 255-6636
dleppo@cityofhbg.com

Vincent, Joshua
President, Center for the Study of Economics
(215) 545-6004
joshua@urbantools.org

Wetzel, Dave
Vice-Chair of Transport for London
London, UK
davewetzel@tfl.gov.uk

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WEB RESOURCES

Center for the Study of Economics
<http://www.urbantools.org>

Earth Sharing
<http://www.earthsharing.org.au/>

Henry George Foundation
<http://www.henrygeorge.org/>

LVT Project
<http://lvtproject.org>

A-5 Standard Offer Contract, Toronto, ON

Summary

The Exhibition Place wind turbine, located on the shore of Lake Ontario near the downtown core of Toronto, is the largest wind turbine in an urban setting in North America. The turbine is co-owned by a wind energy co-operative, WindShare, and by the retail branch of the local electrical distribution company, Toronto Hydro Energy Services. The wind turbine's owners and the Ontario Power Authority have entered a 'Standard Offer Contract' that guarantees that a fixed, premium tariff will be paid to for electricity from the turbine for a period of 20 years.

The Exhibition Place turbine's Standard Offer Contract was issued under the Ontario Power Authority's Renewable Energy Standard Offer Program (RESOP), launched in November 2006. The RESOP allows small renewable electricity generators, with a capacity under 10 megawatts, to interconnect with the province's electrical distribution network and offers to pay such generators a fixed tariff for a 20-year period. The program is open not only to wind projects but also to small hydro, biomass, and solar photovoltaic projects. All wind, hydro, and biomass projects are offered a standard tariff of \$0.11 per kilowatt-hour whereas solar PV projects are offered \$0.42 per kilowatt-hour (both tariffs are to be regularly adjusted for inflation). These tariffs are significantly higher than the current wholesale price of electricity in Ontario, which is approximately \$0.05 per kilowatt-hour, reflecting the higher cost of renewable electric generation as compared to conventional generation. The intention is to stimulate a rapid expansion of renewable energy capacity in Ontario. The program is unprecedented in Canada; no other renewable energy initiative has opened access to distribution grids as widely, has paid such high tariffs, and given such long contracts.

At face value, the program appears to be very successful. In less than a year, over 200 Standard Offer Contracts have been signed and are expected to add over 800

megawatts worth of renewable energy capacity. However, while the RESOP is open in principle to all types of participants, most contracts have been signed with fairly large, commercial power companies; few community-owned power cooperatives have been admitted to the program. It appears that admission to RESOP entails an administrative and financial burden that is too onerous for small, community-based power cooperatives. Moreover, the current tariff system appears to favour larger projects that can achieve economies of scale; cost recovery is unlikely for small projects. Furthermore, it appears that there are still many barriers to interconnection with the distribution grid that are hampering the development of community-based renewable power projects. Until these barriers are resolved, it seems unlikely that other projects similar to the Exhibition Place wind turbine will arise.

Background

The Exhibition Place Wind Turbine is a joint venture between the WindShare Co-operative and Toronto Hydro Energy Services (THES). WindShare was born out of the Toronto Renewable Energy Co-operative (TREC), becoming the first wind power co-operative in North America. THES is an affiliate of the Toronto Hydro Corporation whose mandate is to offer alternative, clean, and green power as well as energy efficiency products and services to costumers in Toronto and across Ontario. Each party has a 50% stake in the wind turbine.

The projects origins date back to 1999, when TREC received a grant from the Toronto Atmospheric Fund to study three potential locations for an urban wind turbine (Girvitz and Lipp, 2005). TREC together with THES identified the Exhibition Place site as a viable location. In early 2002, TREC founded WindShare in order to raise 50% of the capital for the construction of the turbine. It also immediately began seeking the required provincial and municipal approvals.

WindShare's membership and investment campaign proceeded swiftly, reaching the investment target by the year's end (WindShare, n.d.). The required approvals were granted and the turbine was installed at Exhibition Place in December 2002 in a mere two days (Toronto Hydro, n.d.). The total cost of the project was \$1.3 million.

Since completion, the Exhibition Place Wind Turbine has been generating an average of 1,400 megawatt hours annually, which according to Hydro Toronto is enough electricity to power some 250 homes. To date, it remains the only large wind turbine sited in an urban context in all of North America.

At the time of construction, Toronto Hydro had plans to purchase the energy from the turbine and to re-sell that power as a green power premium product to consumers (Joyce McLean, personal communication). However, during the Ernie Eves regime, the provincial government capped the rate that local distribution companies (such as Toronto Hydro) could charge consumers and prevented electricity retailers (such as THES) from signing up new customers. This effectively ended the idea of a green power re-sale market. The owners of the Exhibition Place wind turbine were thus forced to find a new way to generate revenue that would allow it to recover more of its initial cost.

In November of 2006, under a mandate from the Government of Ontario, the Ontario Power Authority (OPA), the provincial procurement body for electricity supply, launched its Renewable Energy Standard Offer Program (RESOP) (OSEA, 2007). As the program was intended to stimulate the creation of new renewable generation capacity, existing renewable generators, like the Exhibition Place turbine, were not admissible to the program. However, after intense pressure from several groups, including the owners of other 'orphaned' generators that had lost the ability to charge premium tariffs, the OPA agreed to sign Standard Offer Contracts (SOCs) under RESOP with the Exhibition Place turbine and a few other existing generators that fit the program's criteria. According to one of the officials responsible for the turbine on the

THES end, the Exhibition Place turbine had to enter an SOC because there was no other mechanism available in Ontario that could provide the turbine with sufficient revenue²².

The RESOP program is the direct result of an initiative taken by the Ontario Sustainable Energy Association (OSEA) in 2004. According to Deb Doncaster, who was the executive director of OSEA at the time, it was Paul Gipe, a wind energy consultant from California, hired by OSEA as an advisor, who initially proposed the idea of implementing European-style feed laws in Ontario. *Feed laws* specify conditions for interconnection of electrical generators with the distribution grid and specify the tariffs that are to be paid for the electricity that fed into the grid. Specifically, Mr. Gipe championed the idea of implementing a sophisticated type of feed laws called *Advanced Renewable Tariffs* (ARTs), such as those pioneered in Germany and implemented in several European states over the last two decades.

In February 2004, OSEA launched a campaign to institute ARTs in Ontario. In November 2004, the ruling Ontario Liberal Party endorsed the concept of ARTs at its policy convention. Shortly thereafter, OSEA was hired by the Ontario Ministry of Energy to prepare a report on 'Standard Offer Contracts', a term which it seemed to prefer over 'Advanced Renewable Tariffs' (for reasons explained in OSEA, 2007). With the help of Bernard Chabot, an expert from France's *Agence de l'environnement et de la maîtrise de l'énergie* (ADEME) and in consultation with stakeholders, OSEA proposed a system of ARTs tailored for Ontario. A report was delivered to the Ministry of Energy in the spring of 2005 and, subsequently, sent to the OPA and the OEB, who were asked to devise an implementation plan. The plan, developed in consultation with OSEA and stakeholders, was delivered in early 2006. The OPA received a mandate from the Ministry of Energy to begin implementing the program in March 2006 and the program was formally launched in November 2006 (OSEA, 2007).

Overall, the idea of opening up the distribution system to small, renewable generators and of providing them with long-

22 It is important to mention that beyond the SOC, the Exhibition Place wind turbine receives a subsidy from the federal government's Wind Power Production Incentive (WPPI), which pays a fixed rate of \$0.01 per kilowatt-hour and thus complements the revenue received via the SOC.

term revenue agreements and to pay them at rates above those paid to conventional electrical utilities seems to have been largely unopposed. The program was proposed to be open to all applicants, including the owners of existing commercial electrical generators. According to OSEA (2007), commercial generators saw the program as an opportunity to realize wind projects without waiting for the province to issue RFPs and therefore offered little resistance to the RESOP.

There was however some disagreement as to the exact nature of the rates themselves. OSEA was in favour of adopting ARTs, or a system of tariffs that are differentiated by the type of renewable resource used and by the intensity of the resource at the given location, as it is the case in France, Germany, and Spain. Under this system, different tariffs are paid depending on whether the project uses wind, solar power, hydro, or biomass. Furthermore, tariffs vary according to the intensity, of wind, sunlight, or water current at the particular location (the concept does not apply to biomass generators). For example, a wind turbine in a very windy location would receive a lower tariff than one in a moderately windy location because the former is likely to generate more revenue than the latter in the same amount of time. In some cases, rates can also depend on other aspects of location, such as whether a wind turbine was located on land or offshore or whether a solar panel is mounted on a rooftop or on the ground. According to OSEA (2007), the OPA and the OEB were opposed to such a system of variable tariffs, preferring instead a single tariff for all types of renewable generators, except solar photovoltaic generators, which are paid a considerably higher tariff²³. The reason given by the OPA and the OBE for favoring a single tariff is that it would provide better value to consumers by forcing projects to meet a minimum level of efficiency. OSEA claims, however, that the single tariff system will fail to attract many potential participants and, as a result, will greatly slow the development of renewable energy in the province. OSEA's stance is that it is more important to increasing renewable energy capacity rapidly than it is to keep prices low – Ontarians should assume the cost of having clean, renewable energy.

THES and WindShare both strongly supported the implementation of the RESOP. In fact, many of the individuals involved in the Exhibition Place wind turbine project were collaborators of OSEA and closely involved in the development of the RESOP. While being overall proponents of the RESOP, both officials from THES and WindShare indicated that the program, in its present form, has certain important shortcomings, discussed in the assessment section below.

Description of the Instrument

The RESOP is an example of an *electricity feed law*. Feed laws are mechanisms that have been widely used in Europe to stimulate the rapid development of renewable electric generation capacity. They generally have two basic aspects: (1) they specify the conditions for connecting renewable generators to the electric distribution system and (2) they specify the price that is paid for electricity from renewable sources. The price paid is intended to allow the owner of a renewable electricity generator to recover his investment and to make a profit, however small. Feed laws are seen as an efficient and equitable way of encouraging widespread participation in and the rapid development of renewable energy capacity. In Europe, the development of renewable energy resources in countries that have adopted feed laws has outpaced that of countries that have implemented other policy measures, such as Renewable Portfolio Standards (RPS) (Manwell, 2006).

In Ontario, a Standard Offer Contract is a 20 year agreement between the owner of a small, renewable electricity generator and the Ontario Power Authority wherein the latter guarantees to pay the former a fixed rate for the electricity generated for the duration of the contract. More precisely, the SOC specifies a base rate and fixes the increments by which the rate will increase over the duration of the contract. By entering the SOC, the owner of the renewable generator agrees to sell electricity to the local distribution company at the rate specified in the contract. The rates currently offered by the RESOP are \$0.11 per kilowatt-hour for wind, hydro, and biomass generators, and \$0.42 per kilowatt-hour for solar photovoltaic generators. In comparison,

²³ In fact, OPA and OEB initially wanted to exclude solar PV altogether because the technology is so expensive and the rates would have to be very high. Ultimately, the Ministry of Energy forced the OPA and OEB to include solar PV and to provide a more generous rate for it.



the average weighted wholesale price for electricity in Ontario in 2007²⁴ has been around \$0.05 per kilowatt-hour (IESO, 2007).

Any party interested in entering a SOC must apply to the OPA before building an electric generation facility. To be eligible for an SOC, a project must:

- exploit only one renewable resource (either wind, sun, hydro, or biomass);
- be located in Ontario;
- produce no more than 10,000 kW per year;
- feed into to the distribution system through a single link with a potential less than 50 kV.

Applicants are required to provide the following:

- a Connection Impact Assessment from the local distribution company;
- evidence that the project meets the environmental assessment requirements of the Ontario Ministry of Environment and that any necessary assessments are under way;
- proof of ownership, leasehold, or other access rights to the property on which the project is to be built.

(Source: OPA, 2006)

Beyond fulfilling the above requirements, acceptance to the RESOP is contingent on the availability of the distribution system at the project's location. Even though certain parts of a distribution system may technically have sufficient capacity to handle an additional load, access may be nevertheless restricted due to the existence of a contract between the OPA and a commercial power generator, giving the latter exclusive rights to the remaining capacity of the distribution system. The OPA publishes a guide showing which parts of the provincial electrical distribution system have little or no transmission constraints ('green zones'), some transmission constraints ('yellow zones'), or no available capacity ('orange zones'). Applications for SOC in orange zones are unconditionally rejected until capacity is made available and the color designation is changed.

Unlike previous efforts to increase renewable energy capacity, which have mostly consisted of direct government subsidies, the cost of the RESOP is not borne by the government. Rather, costs are borne by electricity consumers province wide as they are included in the retail rate that consumers pay for electricity. As a result, a particular consumer's contribution to the RESOP is proportional to the volume of electricity he uses.

Compared to other initiatives for building renewable energy capacity in Canada, the RESOP brings forth several innovations. Most importantly, the RESOP is the first program that aims to provide wide, indiscriminant access to the provincial electric distribution system. The RESOP pays producers of renewable energy more per kilowatt-hour and for a longer period than any other renewable energy initiative in Canada, and for that matter, in North America (Gipe, n.d.). Moreover, as noted above, the RESOP does so without relying on government subsidies - the costs are borne entirely by electricity consumers, unlike other renewable energy initiatives, which have invariably relied on government subsidies.

At present, the RESOP is open to wind, solar, hydro, and biomass projects. According to Kevin Devitt of the OPA, the program will soon be extended to include small, 'clean energy' generators based on industrial byproducts, such as methane, and on heat capture.

Administrative Aspects

The RESOP is administered by the Electricity Resources department of the OPA in collaboration with local distribution companies. The review of applications and the execution of the SOC themselves are carried out entirely by the OPA. There are presently two staff members and two student interns assigned on a full-time basis to administering the program (Kevin Devitt, personal communication). A number of other staff at the OPA provide administrative support to the RESOP on a part-time basis, principally in the review of SOC applications. The number of staff dedicated to the RESOP at any moment depends on the current number of applications to the program. Local

24 Average weighted price between January 1st, 2007 and the date of writing, November 19th, 2007 was \$0.0505 per kilowatt-hour.

distribution companies are responsible for providing SOC applicants with Connection Impact Assessments, for assisting the connection of generators to the distribution infrastructure, and metering the current produced and compensating the owners of the generator. For smaller local distribution companies with fewer administrative resources, this can be a significant burden (OSEA, 2007).

Linkages

As noted above, the program is administered jointly by the OPA and by local distribution companies. The OPA is a body that was established by The Electricity Restructuring Act of 2004 to oversee the province's electricity generation and distribution infrastructure. The OPA answers directly to the Ontario Ministry of Energy but is regulated through the OEB. The OPA and OBE jointly license and oversee the operations of the province's local distribution companies.

The RESOP entails linkages that go beyond the energy sector. The application for a SOC requires an environmental assessment, thereby involving the Ministry of Environment. Furthermore, the successful implementation of SOC project may also require a variety of municipal land use approvals, therefore involving municipalities and the body that oversees them, the Ontario Municipal Board (OMB). The federal government is involved in most cases through renewable energy subsidies, such as WPPI. The program also entails linkages to firms active in manufacturing renewable energy hardware.

Financial Aspects

From the point of view of the Exhibition Place Turbine, entering the SOC entailed hardly any cost, largely due to the fact that the turbine was already operational at the time of signing the contract. All of the necessary conditions for admission to the RESOP, such as environmental assessments and the Connection Impact Assessments, had been carried out long before. Once signed, the contract did not create any kind of administrative burden for the owners of the turbine.



According to one official from THES, Toronto Hydro's co-ownership of the project was a great advantage for entering the SOC. Toronto Hydro, being a local distributor, deals with the OPA on an ongoing basis. Producing the documentation that the OPA required in the application for the SOC required minimal effort. The official suggested that entering an SOC would be much harder for an owner with no relationship with the OPA and lacking the administrative capacity of a large enterprise like Toronto Hydro. For a small-community based cooperative, the costs involved in passing environmental assessments, undertaking a connection impact assessment, and obtaining required permits from the municipality could be quite onerous.

WindShare and THES were not burdened with the cost of the Connection Impact Assessment because Toronto Hydro performed it pro bono – an exceptional situation. However, an illustrative example is the WindShare's recent Lakewind SOC project, for which it spent about \$6,000 for a Connection Impact Assessment from Hydro One, plus up to \$10,000 in engineering fees for designing the connection from their generators to the grid. The environmental assessment for the Exhibition Place turbine cost around \$85,000²⁵. Other costs, such as those for obtaining any required zoning variances and building permits, were on the order of several thousand dollars. David Robertson, an accountant working for WindShare, also pointed out that applying for all of the assessments and permits consumed hundreds of staff hours, adding significant 'in house' costs on top of the fees that were paid to other organizations.

25 David Robertson, accountant for WindShare, indicates that the cost for a similar environmental assessment would now probably be in excess of \$100,000 (from Evan Ferrari, personal communication).

Outcomes

As of the end of October 2007, 204 SOC's have been signed for a total capacity of 811,441 kilowatt-hours (see Table 5 for a breakdown by renewable resource type).

Table 5: RESOP Contracts Executed

Resource Type	Contracts	Capacity (kWh)
Wind	62	543,027
Solar PV	114	188,757
Hydro	14	31,829
Biomass	14	47,828
Total	204	811,441

Source: OPA, 2007

Despite the impressive number of SOC's issued to date, the owners of the Exhibition Place wind turbine see few positive outcomes as of yet for small, community-owned generators. On the positive side, they acknowledge that the program is a big step towards making community-based renewable power projects easier to undertake. In particular, the RESOP makes it easier for community power projects to generate revenues and brings them closer to the prospect of cost recovery. It also makes it easier for yet-to-be built renewable energy projects to raise capital, since having guaranteed revenue decreases investment risks. On the negative side, the interviewed officials THES WindShare agreed that admission to the RESOP involves administrative and financial hurdles that are too great and that the current tariff for wind power is too low for small, community-power projects such as the Exhibition Place turbine to be feasible. The current RESOP tariff is not sufficient to allow recovery of the combined capital costs and assessment and permitting costs incurred by a small wind power project. In contrast, a larger project with several wind turbines would be able to achieve certain economies of scale – i.e., the costs incurred for assessments and permits would be spread over several turbines – and would be far more likely to recover its initial costs given the current RESOP tariff. To reduce barriers

for small-scale wind power projects, the owners of the Exhibition Place Turbine call for simplifying the application process to the RESOP and creating a support mechanism to help community-based renewable energy projects obtain necessary approvals in addition to increasing the tariff for wind power.

Assessment

A thorough assessment of the entire RESOP, as it is currently implemented, is found in a document entitled *Renewables Without Limits*, recently published by the Ontario Sustainable Energy Association (OSEA, 2007). OSEA provides a mixed assessment, echoing many of the opinions voiced by the owners of the Exhibition Place Turbine.

On the positive side, OSEA says that, even though it does not meet all of the recommendation made by OSEA in 2005, the Ontario RESOP is nonetheless the most advanced renewable energy program in North America. At the current tariffs, the program pays more for renewable energy than any other program in North America. It also guarantees revenues for longer than any program on the continent. Although California's precedent setting Standard Offer Contract program offered more generous rates per kilowatt-hour, it did so only for a very limited time (up to 5 years only). If averaged over a 20-year period, the duration of an Ontario SOC, total payments made by the California system would be much lower. Nevertheless, while going much further than any comparable initiative in North America, Ontario's RESOP falls short of the Advanced Renewable Tariffs systems in place in countries such as France, Germany, and Spain.

The OSEA report observes that, to date, the great majority of SOC's have been signed with relatively large, commercial operators whereas only handful has been signed with small, community-based operators. OSEA believes that there are two principal types of barriers preventing small, community-based projects from accessing the RESOP: (1) barriers related to the current tariff structure and (2) barriers related to difficulties with interconnection to the electrical distribution system.

The main barrier preventing more small projects from being signed to the RESOP, according to OSEA, is the current tariff structure. Current tariffs do not take into account the size of a project and the intensity of the resource at a given site. For wind projects, the same tariff is paid regardless of whether the project consists of one or several turbines and whether the project is in a highly or moderately windy location. Many communities that might wish to develop wind turbine projects might not have the means to develop a multiple turbine facility and might not be fortunate enough to be located in or near an area with sufficiently intensive wind resources. A system of differentiated tariffs (such as those used in Advanced Renewable Tariffs programs), which would pay more generous tariffs to smaller-scale projects and to projects located in areas with less intensive wind resources would greatly increase the likelihood that more small, community-based wind projects like the Exhibition Place turbine would be implemented.

The other major category of barriers preventing the participation of community-based projects in the RESOP pertains to interconnection with electrical distribution infrastructure. As explained above, renewable energy projects do not enjoy priority of access to the distribution infrastructure; in fact, it seems that the opposite is the case. OSEA urges the OPA to stop the practice of signing exclusivity contracts for distribution capacity with conventional generators and to give priority to renewable energy projects.

Some of the problems with interconnection do not pertain to the OPA but rather to the local distribution companies. Problems at the distribution company level include excessive charges for connection impact assessments, excessive service charges for interconnection itself, and excessive ongoing charges for metering. Another problem is that some local distribution companies are simply refusing to participate in SOC. There are two reasons: (1) the OPA does not explicitly guarantee to reimburse local distributors for costs related to administering SOC and (2) there are structural disincentives discouraging local distributors' participation. To clarify the

>> Exhibition Place wind turbine in Toronto



latter reason, the OSEA suggests that some local distributors might see the connection of small generators to their networks as being contrary to their interests. Local distributors earn their revenue based on the amount of current they carry over their networks; the presence of small, distributed generators can reduce demand for electricity generated at a remote location and carried over the local distributors network. The OSEA thus urges the OPA to formally assure local distribution companies of full cost recovery for the administrative burden related to administering SOC and to mitigate the present structural disincentives that could discourage local distribution companies from participating in the program.

In sum, the following aspects of the RESOP have proven to be effective in stimulating the growth of renewable energy capacity in Ontario:

- simple conditions for access to the distribution grid; and
- stable, long term tariffs significantly higher than the wholesale price of electricity.

However, the following barriers are preventing smaller, community-owned projects from participating more widely in the RESOP:

- administrative and financial burden entailed by the program's admission requirements is too great;
- current tariffs are too low for smaller projects; and
- there are too many constraints on interconnection.

Other Jurisdictions and Transferability

To date, Ontario is the only province to have a province-wide provision for interconnecting small renewable energy projects to the grid and to set province-wide standard tariffs for electricity produced by such projects. Nevertheless, there are examples of long-term contracts with fixed or stable rates for renewable energy that are not quite SOC. The mechanism used most commonly in Canada for financing wind power is the Power Purchasing Agreement (PPA). PPAs have been used, for example, to pay for power from wind farms recently completed in PEI (www.windfair.net, 2006) and New Brunswick (CanWEA, 2005). For example, the Ventus Energy Norway Wind Park, near Norway, PEI has been given a 20-year contract guaranteeing a fixed rate of \$0.0775 per kilowatt-hour, adjusted for inflation. Like the Ontario SOC, PPAs can provide stable revenues over an extended period of time and are intended to allow complete cost recovery and a margin of profit. However, the major difference between SOC and PPAs is that the latter establish tariffs and contract durations on a project-by-project basis. As a result, the conditions in PPAs tend to vary from project to project. Furthermore, PPAs are not linked to provisions for open access to the distribution grid; access to grid is negotiated together with other conditions of the PPA. PPAs are often tied to Renewable Portfolio Standards (RPS), which prescribe quotas for renewable energy capacity to be created. This is contrary to the spirit of the RESOP, which sets no ceiling for the number of projects and the total renewable energy capacity to be created. As they are negotiation-intensive by nature, PPAs do not seem to be a mechanism with great potential for use with community-based power projects.

Another interesting example is Calgary's 'Ride the Wind' program, a 10-year contract initiated between Vision Quest Windelectric and the City of Calgary²⁶ in 2001 to supply electricity for the city's LRT system, the C-Train. The type of contract used in this case is called a 'contract-for-difference' (CFD). At the time that the contract was signed, Alberta's electric power pool (the mechanism used for setting market prices for electricity) was experiencing

severe price fluctuations, frustrating generators such as Vision Quest, who need a guarantee stable revenues in order expand generating capacity, and major consumers such as Calgary Transit, who have an interest in having a predictably priced power supply. Vision Quest approached the City of Calgary and proposed the idea of the 10-year contract. The two parties agreed to a fixed tariff for the current used by the C-Train. Beyond inflation adjustments, the tariff paid by Calgary Transit is compared on an annual basis to the average power pool price for electricity. If Calgary Transit overpaid with respect to the pool price, Vision Quest is obligated to refund a certain portion of the overpayment. Similarly, if the Calgary Transit paid less than the average pool price, it must compensate Vision Quest for a certain portion of the difference. As a result, both parties share the risks associated with fluctuating pool prices. While CFDs are a popular mechanism for Public-Private Partnerships (PPPs), they are very complex – much more complex than SOC or any other Advanced Renewable Tariffs. Like PPAs, they do not seem to be well suited for small-scale, community power projects.

Given that it has been possible to implement Advanced Renewable Tariffs in over a dozen European, despite significant structural differences between their energy sectors, it seems that the same should be the case for other Canadian provinces. Like in Europe, each province will have to adapt tariffs and interconnection rules to fit with the structure of its energy sector. It would seem that provinces that still have a publicly owned and highly vertically integrated energy sector would find it easier to implement Advanced Renewable Tariffs. In Quebec, for example, the province's giant public electric utility, Hydro Québec, owns most generators, the entire transmission and distribution system, and is entirely responsible for wholesale and retail of electricity. Whereas the administration of the Ontario RESOP is shared between the OPA and numerous local distribution companies, a similar program in Quebec could be administered entirely by Hydro Québec. Furthermore, Hydro Quebec would not encounter the kind of structural disincentives that discourage local distributors in Ontario from participating in RESOP.

26 EnMax, the operator of Alberta's electric distribution infrastructure, is also a minor party to this contract as it is responsible for transmitting the power from Vision Quest's wind farm to Calgary and for metering the C-Train's power usage.



Implementing a RESOP-like system in jurisdictions with a decentralized energy sector, like Ontario, entails important administrative challenges. The challenges would pertain mostly to (1) ensuring equal access to all local distribution networks, (2) metering and paying for renewable electricity fed into different local distribution networks, and (3) spreading the costs of the program to all electricity customers across the province. In general, meeting these challenges requires coordination between a central body that oversees the Advanced Renewable Tariff program and the independent entities that administrate generation, distribution, wholesale and retail of electricity.

Renewable Portfolio Standards are a potential policy barrier to the implementation of Advanced Renewable Tariffs. As noted above, RPSs are contrary in spirit to the idea Advanced Renewable Tariffs, as they specify a ceiling for renewable energy capacity. Advanced Renewable Tariffs would not compliment but would rather have to replace a RPS policy.

Resources

INTERVIEWEES

Colquhoun, Dave
Lead, Transportation, Sustainable City Team
City of Calgary
(403) 268-1501
dave.colquhoun@calgary.ca

Devitt, Kevin
Senior Analyst, Standard Offer Program Team
Electricity Resources
Ontario Power Authority
(416) 969-6060
kevin.devitt@powerauthority.ca

Doncaster, Deb
Executive Director
Community Power Fund
(416) 977-3154x41
deb@cpfund.ca

Ferrari, Evan
President of the Board of Directors
WindShare (416) 971-9453 x 43
ferrari@wildlandsleague.org

McLean, Joyce
Manager of Green Energy Services
Toronto Hydro Energy Services
(416) 542-3047
jmclean@torontohydro.com

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A-6 Stormwater Utility Fee Credits, Minneapolis, MN

Summary

In 2005, the City of Minneapolis instituted a stormwater fee. Residential, industrial and commercial property owners were formerly assessed a monthly sewer fee based on their water usage, which covered the costs of both the sanitary drainage system and the stormwater drainage system. Under the new system, different tiers and types of residential properties are assessed at different rates, and the fees for commercial properties are set by calculating their amount of impervious surface area.

To encourage customers to reduce their total impervious surface area, and give them an opportunity to lower the financial impact of the stormwater charge, the city introduced a stormwater credit program. Property owners can install green infrastructure that helps contain storm surges, promotes local infiltration of stormwater runoff into the ground, and filters out contaminants and suspended solids; their stormwater fee is reduced after calculating the amount of runoff that is diverted from the stormwater drainage system.

The stormwater best management practices (BMPs) that qualify for the program include green roofs, rainwater gardens, infiltration ponds, and swales. Quality credits are aimed at homeowners, in an effort to get the larger population involved with and concerned in wastewater management; residential property owners can install small-scale BMPs on their own properties to handle the runoff from roofs, driveways and other impervious surfaces. Quantity credits are offered to non-residential properties, and are intended to support the construction of more elaborate and technically challenging installations that will slow the influx of runoff into stormwater drains after storms or permit it to infiltrate directly into the ground or a green roof.

Introducing a separate stormwater fee was largely intended as a fiscal fairness measure to distribute the financial burden of

>> Stone arch bridge into Minneapolis



maintaining and improving the stormwater drainage system onto properties that generated the greatest volumes of runoff. Fee offsets to encourage reductions was intended to add a green component to a fiscal measure, and to give property owners an option to reduce or eliminate a politically contentious user fee. Hundreds of stormwater BMPs have been installed as a result of the program, though the total reduction in stormwater volumes is difficult to estimate.

Background

The City of Minneapolis is home to 388,000 people (2006), a 1.4% increase over 2000. The largest city in the Twin Cities region that encompasses 2,822,000 people, it has long served as a financial and industrial hub for east central Minnesota and the enormous agricultural regions of the northern Great Plains beyond.

The structure of the Twin Cities metropolitan region, in which the administratively separate cities of Minneapolis and Saint Paul have distinct downtowns ten miles apart, is due to the particular characteristics of the Mississippi River that flows past both. The rapid descent of the river through Minneapolis spurred the growth of grain mills, which located along its banks to take advantage of abundant water power. Saint Paul, further downstream, was the last navigable point for boats coming up the Mississippi. Together they formed an economic unit that processed the grain of prairie farmers and shipped it to points south and east.

Minneapolis is ringed by shallow freshwater lakes that are highly sensitive to surface runoff, and often surrounded by residential development. As a cherished and vulnerable part of the city's landscape, the lakes and their water quality are frequently cited as key reasons for the high local profile of efforts to improve water quality and control stormwater.

In March of 2005, the City of Minneapolis introduced a separate line item for stormwater drainage on its monthly city utility bill. Though the stormwater drainage system is separate from the sanitary sewer system, its costs were incorporated into the sanitary sewer charge. Given that the sanitary sewer charge varied by the amount of water consumed by each customer, heavy water users (who were generating a larger quantity of sanitary wastewater) covered a greater proportion of the cost of the separate stormwater system. Properties such as parking lots or industrial warehouses – which may consume little or no drinking water, but whose large impervious surfaces direct large amounts of stormwater runoff into the stormwater drainage system – were effectively receiving a subsidy from water-using businesses and households that had a minimal direct impact on the stormwater system. A separate stormwater charge, calculated by estimating the property's total impervious surface area, was therefore a revenue-neutral change designed to more

fairly distribute the financial burden of the stormwater system.

Employing best management practices (BMPs) such as green roofs and rain gardens can earn customers up to a 100% reduction in their stormwater utility fee. A quality rebate of up to 50% is available, targeted at single-family homes, and entails relatively simple measures that homeowners can build themselves. Quantity rebates, which can eliminate up to 100% of the fee, are more complex to design, build and maintain, and are aimed at larger commercial and industrial property owners. Public Works staff must certify and evaluate the plans and installations, and in the case of larger BMP facilities, carry out annual inspections.

Description of the Instrument

The stormwater fee is assessed for all properties in the city and included in Minneapolis' monthly utility bill, along with line items for household water, solid waste removal, and the like. Properties are currently charged \$9.77 per month for each Equivalent Stormwater Unit (ESU) (CoM 2005). The Minneapolis ESU measure was developed by the City Assessor's Office, an agency which possesses related expertise in calculating property values and use types to assess property taxes, and maintains a GIS system containing detailed land and building data and imagery for that purpose.

Table 6: Sample utility bill with showing stormwater fee

12345678	7/10/06	8/10/06	245	ACT	248	ACT	3	Water 5/8" General
Account Activity								
Previous Balance								40.96
Payment - 8/08/06								40.96CR
Balance Forward								\$0.00
Current Charges								
Water 5/8" Meter		3	units @	\$2.62	each or \$2.00 minimum			7.86
Sewer		3	units @	\$2.10	each or \$2.00 minimum			6.30
Stormwater Fee		1.00	ESU @	\$9.17	per ESU			9.17
Minnesota Water Testing Fee								.43
Solid Waste Base Fee		1.00	@	\$22.25	per dwelling unit			22.25
Large Cart Disposal Fee		1.00	@	\$4.00	per cart			4.00
Recycling Credit		1.00	@	\$7.00-	per dwelling unit			7.00CR
9.75% Solid Waste Management Tax(see back)								1.39
Hennepin County Fee								1.28
Total Current Charges								\$45.68

Source: City of Minneapolis

Table 7: Runoff coefficients by land use

Land use	Coefficient
Bar/resto/entertainment	.75
Car sales lot	.95
Cemetery w/monuments	.20
Central business district	1.00
Common area	.20
Garage/Misc. res	.55
Group residence	.75
Indust – Warehouse/factory	.90
Indust – Railway	.85
Institution/school/church	.90
Misc. commercial	.75
Mixed comm/res/apt	.75
Multi-family apartment	.75
Multi-family res	.75
Office	.91
Parks & playgrounds	.20
Public accommodation	.91
Retail	.91
Single-family attached	.75
Sport/rec facility	.20
Utility	.90
Vacant	.20
Vehicle-related	.90

Source: Minneapolis 2006 NPDES Stormwater Program & Annual Report

The ESU measure is based on the average square feet of impervious surface found on a typical Minneapolis single-family residential property, between 1485 and 1578 sq.ft. “Tier 2” residential properties pay for a single ESU, while “Tier 1” households (more than 1578 sq.ft of estimated impervious area) pay

125% of the charge and “Tier 3” properties (less than 1485 sq.ft) pay 75%. The base ESU charge is slated to rise to \$10.26 in 2008, and increase 2% per year thereafter.

Other types of land uses are assessed by a formula that sets the number of ESUs per property and applies a use-specific coefficient (Table 7):

example:

$$\frac{(\text{Gross lot size in sq.ft X Runoff coefficient})}{1,530 \text{ sq.ft}} = \text{number of ESU}$$

Properties that are exempt from the fee include “public rights-of-way, public trails, public streets, public alleys, public sidewalks, railroad tracks that are not in railroad yards” – this comes out to roughly 40% of the city’s total area (CoM 2005a).

The stormwater bylaw includes an appeal procedure, by which property owners who dispute the calculation of the charge for their property can submit evidence to the city’s public works director. The main stormwater utility ordinance sets the framework for the system of residential tiers and different coefficients for other land uses, which are detailed in later ordinances to make changing the fee or modifying the formula

>> Tax fee is based upon impervious surface area



more legally straightforward.

Table 8: Suggested Minnesota BMPs

Impervious surface reduction: Reducing the amount of hard surface	Green rooftops Street design Cul-de-sac design Parking lot design Turf pavers
Housekeeping techniques: Basic clean-up and management practices	Pavement management BMP maintenance Landscape design and maintenance Animal management
Construction practices: Reducing opportunities for sediment release in stormwater	Grading Sequencing Vehicle tracking pad
Soil erosion control: Techniques to prevent exposed soils from eroding	Mulches, blankets and mats Vegetative methods Structural methods
Sediment control: Methods to catch sediment already suspended in stormwater	Silt fences Inlet protection Temporary sedimentation basins/traps Check dams
Stormwater treatment BMPs	
Infiltration systems: Encourage stormwater to soak into the ground while filtering	On-lot infiltration Infiltration basins Infiltration trenches
Filtration systems: Capture heavy metals, grease and oil, nutrients and sediment	Bioretention systems Surface sand filters Underground filters Filter strips

Source: Minnesota Urban Small Sites BMP Manual

Property owners can apply for stormwater fee credits if they improve stormwater run-off quality or reduce the quantity of runoff through applying one of the best management practice (BMPs) listed in Table 8.

The **quality** credit is targeted at homeowners and can reduce a property's stormwater fee by up to 50%. To apply for it, the property owner is required to submit an annotated scale drawing of their property outlining the proposed BMP and the area it covers. The credit is calculated by dividing the percentage of the total impervious area by the impervious

area treated by the BMP, multiplying the result by 50%, and then multiplying the resulting percentage by the preexisting stormwater fee. As an example, a 2500 sq.ft property with a 600 sq.ft roof, 150 sq.ft garage, 500 sq.ft patio, and 400 sq.ft driveway would have 1650 sq.ft of impervious area. This Tier I residential property would pay \$12.21 in stormwater fees per month. A rain garden that handled the runoff from the patio and driveway, 55% of the impervious area on the site, would qualify it for a 27.78% reduction in the stormwater fee, reducing it by \$3.39 to \$8.82 (CoM 2005b).

The **quantity** credit, aimed at the owners of larger properties, is somewhat more complex.

The application must be certified by a registered engineer or landscape architect, and contain a detailed site plan including existing buildings and stormwater infrastructure, the proposed BMPs, rainfall calculations, and a maintenance plan. To receive the quantity credit, owners have to demonstrate that the BMPs can control all stormwater from the entire property; they can receive a 50% fee reduction if the BMP can handle a 10-year, 24-hour rainfall event, and a 100% reduction if the BMP is capable of controlling a 100-year, 24-hour event. City inspectors annually assess the BMP's maintenance, capacity and effectiveness (CoM 2005c).

The Minnesota Urban Small Sites BMP Manual was developed by the Metropolitan Council (a regional services body) in 2001, and the City of Minneapolis adopted these as the preferred options for the stormwater credit. Two general categories of BMPs are included in the Manual: those that retain stormwater and permit it to infiltrate naturally at the site, and those that slow the release and improve the quality of stormwater that flows to local water bodies.

These BMPs are also favoured in other municipal efforts to improve stormwater quality and bring Minneapolis in line with federal regulations. The 2000 stormwater ordinance specifies that a Stormwater Management Plan (SWMP) be submitted for any development project larger than 1 acre, and establishes a registration and inspection regime for existing private stormwater mitigation facilities. On-site management of stormwater is required in new developments, except when "development density, topographic features, or soil or vegetation conditions" necessitate that stormwater be handled by off-site facilities such as the separate storm drain system. For on-site features, the ordinance favours infiltration systems over treatment systems (Chellsen 2007, Met Council 2001).

The stormwater fees collected by the city are put into a stormwater fund that pays for stormwater capital and operating expenditures and is administered by the Minneapolis Department of Public Works. The DPW also undertakes garbage and recycling

collection, street maintenance, and parking services. In addition to funding the storm sewer system, the stormwater fund pays for street sweeping (reducing the amount of debris, dirt, plant matter and road salt that get into the stormwater system), as well as transfers to the Metropolitan Council that operates stormwater interceptors and other major regional stormwater infrastructure (CoM, 2006a)

An example of the mechanism in action is provided by the main campus of the University of Minnesota, near downtown Minneapolis, on either side of the Mississippi River. The university maintains several of its own environmental facilities, including a drainage network that covers the core of its East Bank campus and is large enough to require its own NPDES permit each year. While some buildings drain their stormwater to the university's system, others connect wholly or partially to the city's system and are subject to the stormwater fee. With strong institutional expertise in stormwater management, an active capital construction program and a hefty stormwater bill, the university was highly motivated and well positioned to examine BMPs and reduce its fees. The university's Facilities Management maintains a CAD system that enabled it to provide the city with an exact calculation of the surfaces that drained to its BMPs, allowing the application process to move smoothly. Its efforts have allowed it to save an estimated \$300,000 per year on its stormwater fee, from a campus with over 7 million square feet of impermeable surface area.

Administrative Aspects

Administrative efforts to get the stormwater fee off the ground entailed significant commitments of staff time. Properties were first identified through city utility records, but not every lot in Minneapolis was charged a water and sewer fee. Parking lots, storage yards and the like would not have had water or sewer connections, so they would have to be identified and added to the rolls. A single business with a single address might in fact be operating over several individual property parcels, which had to be ferreted out and added to the main utility bill.

Inspecting and certifying BMPs requires ongoing administrative work by inspectors who annually assess and verify quantity credits. Public Works staff estimate that out of 120,000 properties in the city, 3-5000 have requested reviews of their assessment in the two years that the stormwater fee has been in place, and all of them have been handled by only two to three staff members.

Linkages

The Minneapolis stormwater program is part of federal and state frameworks that regulate water quality and stormwater discharge into rivers and lakes. In addition to these upper-level mandates, local watershed bodies and the regional government also manage water quality in and around the Twin Cities.

Under the 1972 federal Clean Water Act, US municipal wastewater systems that release CSOs are regulated by the Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) Storm Water Program (US EPA 1983). Enforcement of the NPDES standards is delegated to state agencies in most cases (including Minnesota), and owners of large municipal separate stormwater systems (MS4s), those that serve more than 100,000 people, are required to implement storm water pollution prevention plans (SWPPPs) or citywide SWMPs, both of which must make use of best management practices (US EPA 2007). A new NPDES stormwater framework came down in 1990, and its Phase I required cities to implement site-specific SWMPs for developments larger than 5 acres. Rules for Phase II were promulgated in 1999, and required SWMPs for developments of an acre or larger.

In Minnesota, the NPDES permit process is handled by the Minnesota Pollution Control Agency, which conducts its own State Disposal System permit process in parallel – for urban MS4s, the NPDES permit is simply used in place of the state requirements (MPCA 2006). Since 1982, Minnesota's Metropolitan Surface Water Management Act has required Twin Cities-area municipalities to participate in Watershed Districts (WDs) and Watershed Management Organizations (WMOs), planning for surface water and groundwater management across municipal lines (MBWSR 2006, SoM 1982).

The seven-county Metropolitan Council was established in 1967. Governed by a seventeen-member board appointed by the state governor, the "Met Council" carries out regional growth planning, maintains affordable housing, operates a regional park and open space system, monitors water quality and runs the regional wastewater system for the area around Minneapolis and St. Paul. While the individual municipalities manage flood control, stormwater and drinking water supply, the Met Council moves and treats sanitary wastewater; maintaining water quality and eliminating CSOs requires close cooperation between the cities and Metropolitan Council Environmental Services (Met Council 2005). The division of tasks is long-established and accepted by partners, and relations between the different levels of regional water management are reportedly good.



photo: Claire Tebbs

Financial aspects

The goal of the stormwater fee was to make wastewater assessment fairer, and was therefore designed explicitly as a revenue-neutral model. Put simply, customers who used to pay a single fee that applied to both sanitary and storm drainage, now receive bills with two separate sewerage line items instead of one. Revenue from the stormwater fee is combined with state and federal grants and a small portion of other, miscellaneous revenues, to comprise the City's Stormwater Fund.

Table 9: Stormwater fund

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Charges					34,388	35,781	36,976	37,027	33,243
Total stormwater fund				32,697	37,043	41,398	41,300	41,190	40,821
Stormwater expenditures*				42,838	38,063	40,165	41,167	40,529	37,240
Deficit/surplus				-10,141	-1,020	1,233	133	661	3,581
Total sewer expenditures (FY 2005 budget)	73,999	70,757	76,799	75,933	75,414	74,088	71,904		

*Includes some sewer design & maintenance expenditures covered by the sanitary sewer budget, and additional Public Works capital expenditures excluded from the stormwater utility numbers presented below.

Source:Minneapolis Budgets FY 2005 & 2007 – Financial Plan



Table 10 includes total sewer expenditures from before the stormwater and sanitary funds were separated, to give some idea of the share of stormwater expenditures in the overall sewer budget. Projected figures are given in grey. Note that both before and after the stormwater fee was instituted, total expenditures remain relatively stable

(or at least fluctuate to the same degree). An adjustment period in the first two years of the utility's operation is clearly visible in the budget figures, as more properties were found and brought into the stormwater fee system, and the fee was increased to counter total revenues that were lower than expected.

Table 10: Stormwater utility expenditures

	2005	2006	2007	2008	2009	2010
Operating expenses						
Sewer design	2,379,961	2,536,533	2,602,329	2,680,399	2,760,811	2,843,635
Sewer maintenance	2,244,367	2,771,036	2,854,167	2,939,792	3,027,986	3,118,825
Transfers to Met Council	1,421,054	1,780,434	1,780,434	1,780,434	1,780,434	1,780,434
General fund overhead	733,137	278,426	286,779	295,382	304,244	313,371
Utility billing overhead	687,784	819,778	844,371	869,702	895,793	922,667
CSO expenditures	2,066,175	2,284,675	2,353,215	2,423,812	2,496,526	2,571,422
Street cleaning	6,556,393	6,124,354	6,308,085	6,497,327	6,692,247	6,893,014
Govt service fee	1,364,519	1,973,571	2,032,778	2,093,761	2,156,574	2,221,272
Total operating	17,453,390	18,558,807	19,062,158	19,580,610	20,114,615	20,664,641
Capital expenditures						
Pay-as-you-go	995,000	1,562,500	3,052,500	1,622,500	3,927,500	3,169,000
Debt service						
Current	12,030,134	10,750,057	9,015,138	10,195,048	4,410,037	2,201,052
Proposed future	-	811,735	1,641,270	3,445,163	4,989,827	5,538,530
Total debt service	12,030,134	11,561,792	10,656,408	13,640,211	9,399,864	7,739,581
Total revenue requirements	30,478,524	31,683,099	32,771,066	34,843,066	33,441,979	31,573,222

Source: Minneapolis 2006 NPDES Stormwater Program & Annual Report

Table 10 shows the breakdown of stormwater utility expenditures coming out of the stormwater fund once it is up and running. Debt service is projected to decline, as capital

expenditures move from a debt-based model to a pay-as-you-go system, a way of getting debt off the City's books and encouraging more consistent annual capital investments.

It is unclear just how many fee rebates there have been and of what type, or what their net impact has been on the actual flows into the stormwater system and the quality of the water that it discharges. EPA NPDES reporting requirements, which drive state and local stormwater assessment, do not include targeted limits for pollutants, but are instead designed to lead to overall reductions of pollutants in surface waters and a general improvement in their quality. According to Public Works sources, of roughly \$30 million in annual stormwater fees collected each year in Minneapolis, around \$700,000 is foregone due to stormwater credits. The credits do not appear as line items in the Public Works portion of the City budget, nor do they appear in the NPDES reports. Stormwater credits are internally assessed, during the rate adjustment process carried out inside Public Works, and are assumed to have little impact on the actual quantity of new infrastructure required.

Outcomes

The 2006 National Pollutant Discharge Elimination System report filed by the City of Minneapolis includes a succinct statement of the primary objectives of the stormwater utility:

- To implement a stormwater utility to pay for 100 percent of the City's annual stormwater management program (including all activities related to NPDES permit requirements)
- To implement the utility fee in such a manner as to reflect the impacts of different types of land use
- To aid in the development of stormwater management programs
- To distribute stormwater management program costs in an equitable fashion (The previous method was based on metered water usage, and did not take into account the amount of a property's amount of impervious surface)
- The new Stormwater Utility fee was designed to be "revenue neutral"; the new fee is offset by a reduction in the sanitary sewer fee. The sanitary sewer fee formerly included an amount for stormwater

management. With separate fees for storm & sanitary management, by being revenue neutral, the citywide total revenue would remain approximately the same

- To implement a program of quantity and quality credits (against stormwater utility fees) to encourage the adoption of best management practices (BMPs) for reduction and treatment of surface water runoff

Table 11: Stormwater utility revenues by land use type

Land use	% fee revenues
Unknown	0.02
Multi-family res	4.01
Bar/resto/entertainment	0.89
Office	5.16
Car sales lot	0.10
Parks & playgrounds	0.12
Cemetery w/monuments	0.63
Public accommodation	0.26
Central business district	2.67
Retail	4.95
Common area	0.05
Single-family attached	0.47
Garage/Misc. res	0.85
Single-family detached	29.93
Group residence	1.41
Sport/rec facility	2.93
Indust – W'house/factory	20.22
Utility	1.19
Indust – Railway	0.52
Vacant misc. landscape	0.21
Institution/school/church	6.25
Vacant commercial	0.01
Misc. commercial	3.69
Vacant industrial	0.05
Mixed comm/res/apt	1.15
Vacant residential	0.02
Multi-family apartment	10.13
Vehicle-related	2.11

Source: Minneapolis 2007 NPDES Stormwater Program & Annual Report



Most of these objectives have been met. The stormwater utility is up and running, and after some adjustments stormwater charges are sufficient to cover expenditures. The rate paid varies significantly by land use, the City has determined representative shares of impervious surface area for land use types, set variable rates based on them, and adjusts the stormwater charge when necessary to account for variation between individual properties. The program appears to be revenue neutral, and the variations in stormwater expenditure seen in the tables in the previous section are largely due to fluctuations in the costs of debt servicing.

Public Works staff estimate that 3-400 single-family properties receive a quality credit; it is unknown how many other properties of other kinds receive credits for their BMPs, but the total annual dollar value of the offsets is roughly \$700,000. Only figures from the first year of the program are available, but they suggest a quick influx of early adopters. 250 site plans for new development were reviewed by Public Works, and 160 of them were approved. Over 40 of those included stormwater BMPs, which will handle flow from over 100 acres. In both existing and new development, 350 BMPs in all were installed on public and private property, and 215 of those had obtained quality or quantity credits by June 2006 (CoM 2006).

Assessment

The Minneapolis stormwater utility is still young, but the municipal and regional context provides long experience with user-supported infrastructure, pay-as-you-go capital funding, and water quality concerns. While other cities offer credits, very few offer them to single-family homes or small commercial sites, which require a large amount of administrative attention for a small stormwater return. Interviewees anticipated that more households would take advantage of the credits, but City staff report that they have plenty of work handling the relatively few who did apply.

Interviewees agree that the fee as such is not high enough to directly encourage the use of BMPs, and does not raise enough revenue to

offer substantial retrofit grants to property owners. The higher public profile that the stormwater fee gives to surface runoff has, however, driven many residents and property owners to pursue BMPs as a badge of green pride in a region where environmental commitment has historically been taken seriously. In the absence of a reliable way to directly meter stormwater use, calculating the stormwater load generated by a given property remains a technical challenge that requires considerable administrative expense and is often perceived by users as an elaborate bureaucratic burden. The current stormwater fee is too low to encourage massive and significant adoption of BMPs, but advocates and city officials consider the availability of credits to individual households and community interest in installing neighbourhood rain gardens as effective public outreach tools that advertise the challenges of water quality and the potential of green infrastructure to improve it.

The BMPs that are part of the stormwater fee and credit program are important in achieving additional improvements in wastewater quality after years of large-scale policy and infrastructure efforts to address major point sources of water pollution and rehabilitate drainage systems. Several interviewees noted that fifteen years ago, there were CSO events every three days, and a concerted City effort turned the situation around to the point where there are now only three or four CSO events a year. After the heavy infrastructure investments that accomplished this, advocates have turned to smaller-scale green infrastructure BMPs to help achieve further reductions and eliminate CSOs entirely.

Whether property managers, even those who already have BMPs in place, are prepared to apply for the credits is less certain. For instance, Marquette Plaza is a large downtown office building with an adjacent underground parking deck. During major renovations in 2002, the granite plaza that topped the deck was replaced with a large green roof as a memorial garden to victims of cancer. Though building operators are proud of claiming the largest green roof in the state, the building manager is unsure

of the complex's total stormwater bill and does not claim the stormwater credit. This suggests that although owners of parking lots strenuously opposed the fee, its costs may not be sufficiently high as to enter into the calculations of other property owners.

Success factors include:

- Created higher profile for, and public involvement in, green stormwater management through quantity credits for single-family homes
- Introduced the first local financial incentive for facilities planners to consider impervious surface area and stormwater mitigation

Challenges include:

- Fee is not high enough to significantly affect design decisions for smaller facilities or make more intensive BMP installations significantly more financially attractive
- Emphasis on fairness and fiscal restraint limit revenues that could be used for promoting and supporting additional BMPs

Other Jurisdictions and Transferability

Portland, Oregon has had a stormwater utility since 1977. The most recent revisions to the utility rate came in 1999-2000, when the city split the residential stormwater charge into two components: 35% is considered an onsite charge, covering the stormwater runoff from the property itself, and 65% is an offsite charge to account for stormwater from the public right-of-way. Driveways are not considered part of the impervious surface of a property, so most of the onsite runoff is generated by roofs, which, in Portland's rainy climate, generate slow, steady stormwater loads. While slightly less than 50% of the relevant land area is covered by public right-of-way, the 65% offsite share of the fee accounts for the heavier, quicker stormwater load shed by public streets, and its lower quality. In 2006, the City introduced a credit system, which permits those households that disconnect their downspouts to claim a 35% reduction in their stormwater fee.

Other stormwater credit systems are targeted at nonresidential properties or multi-family dwellings. Gainesville, Florida, Louisville, Kentucky, Durham, North Carolina, Cincinnati, Ohio, Austin, Texas, and King County, Washington State all offer credits for non-residential or commercial properties; most allow a maximum credit of 50% or above and are focused on stormwater detention and retention rather than quality. Others, like Orlando, Florida, Wichita, Kansas, Charlotte, North Carolina, and Tulsa, Oklahoma offer a credit to multifamily residential properties or larger properties of all uses (Lindsey & Doll 1999). Uptake of the fee credits varies dramatically from city to city, and in some cases there were simply no applicants.

Unfortunately, little of the pressure from upper levels of government that has forced some US cities to make a concerted effort in stormwater quality exists in the Canadian context, either federally or provincially. A more thorough water quality regime for wastewater and surface water, at both the provincial and federal levels, would lead municipalities to pursue more robust and effective stormwater infrastructure. In turn, the political and engineering challenges posed by such investments would lead municipalities to seek financial and technical innovation in implementing them.

In Canada, only Regina has implemented a stormwater utility system, which does not yet cover the entire costs of the system, and does not offer fee credits for onsite stormwater management. (Cameron et al. 1999). The City charges separate sanitary and stormwater sewage fees to residents and commercial property owners. Like Minneapolis, it assesses sanitary sewer fees based on monthly water uses; stormwater fees for residential properties are fixed at a flat rate, while commercial properties pay a rate based on the total size of their property. If GIS systems are already in place, it would be technically feasible to do a more detailed assessment of surface conditions on residential as well as commercial properties, giving residential property owners an incentive to increase the amount of permeable surfaces. Similarly, a more fine-tuned commercial fee assessment would discourage parking lots and encourage green roof applications. Offering offset credits for these fees would take the fee

system beyond disincentives for generating stormwater. For cities with fee systems like Regina, detailed stormwater fee assessment and offset credits could lead to a reduction in overall runoff volume from residential and non-residential properties.

Resources

INTERVIEWEES

Goodman, Lisa
Councilor
City of Minneapolis
(612) 673-2207
lisa.goodman@ci.minneapolis.mn.us

Malmquist, Jerome
Departmental Director Facilities Management
University of Minnesota
(612) 625-3438
malmq003@umn.edu

Moriarty, Barb
Building Manager
Marquette Plaza
(612) 604-1795

Andrew Phelan
Assistant Director of Environmental
Health and Safety
University of Minnesota
(612) 626-7744
andyph@umn.edu

Dan Vizzini
Principal Financial Analyst
Bureau of Environmental Services
City of Portland
(503) 823-4038
danv@bes.ci.portland.or.us

Karl Westermeyer
Supervising Engineering Technician
Public Works and Engineering Services
City of Minneapolis
(612) 673-2965
karl.westermeyer@ci.minneapolis.mn.us

Corrie Zoll
Executive Director
Minnesota Green Roofs Council
(612) 423-2048
corrie@mngreenroofs.org

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WEB RESOURCES

Minnesota Green Roofs Council:
www.mngreenroofs.org

Green Institute – Phillips
Eco-Enterprise Center
www.greeninstitute.org/buildings/

Friends of the Mississippi River:
www.fmr.org

Mississippi Corridor Neighborhood Coalition:
www.mcmc-mpls.org

City of Minneapolis stormwater home:
<http://www.ci.minneapolis.mn.us/stormwater/>

Minnesota Pollution Control Agency
stormwater home: www.pca.state.mn.us/water/stormwater/index.html

US EPA Office of Wastewater Management:
www.epa.gov/owm/

Metropolitan Council: www.metrocouncil.org

Mississippi Watershed Management
Organization: www.mwmo.org

Minnehaha Creek Watershed District:
www.minnehahacreek.org

Shingle Creek Watershed Management
Commission: www.shinglecreek.org

Bassett Creek Watershed Management
Organization: www.bassettcreekwmo.org

Portland Bureau of Environmental Services –
Stormwater Management:
www.portlandonline.com/bes/index.cfm?c=31892



A-7 TOD Policy Leveraging Through Infrastructure Funding, San Francisco, CA

Summary

The Metropolitan Transportation Commission (MTC) is a regional transportation planning and funding agency that covers nine counties in and around the San Francisco Bay Area. The region's explosive population and employment growth, coupled with its unique geography, have led to congested highways, overloaded transit, and housing costs that are some of the highest in the world. In response, the MTC established programs in 1998 to improve streetscapes and increase residential densities around transit stations. Starting in 2000, a series of regional plans laid out new transit corridors that opened up significant redevelopment opportunities. Eventually, a transit-oriented development (TOD) policy was passed in 2005, requiring local municipalities to plan for higher densities in brownfield, greenfield, and built-up station areas. The MTC helps fund the land use plans, but the funding comes with a catch: if the municipalities fail to rezone station areas for a certain level of density, the transit extensions will not go forward.

Under the TOD policy, new transit extensions are subjected to a density threshold based on the carrying capacity of the given transit mode and the existing land-use context. To help member municipalities achieve this, the MTC offers planning grants for both the immediate station area and the neighbourhoods within a half-mile radius of the proposed transit facility. Corridor working groups have been established to coordinate different municipalities along the new corridors, and make regional agencies available to provide support for the planning process. Until the municipality backs up the area planning processes by passing supportive zoning regulations, and the MTC reviews that the appropriate densities are in place all along the corridor, construction will not proceed.

The policy is still in the early stages of implementation. Some components, such as the corridor working groups, have not

worked out as hoped. The approach is already regarded as highly successful, however, and the planning resources that the MTC supplies to the municipalities have earned it the support of local elected officials and communities in the targeted areas. While some of the corridors have encountered engineering or funding barriers, the region's continued economic growth and housing pressure have driven its cities to push forward with planning for increased densities now, so that land uses will be in place to support the transit facilities when they do arrive.

Background

The nine counties of the San Francisco Bay Area have long been accustomed to rapid population growth, particularly during and after World War II when military installations, defense industries and academic institutions laid the ground for successive high-tech revolutions. The Bay Area's economy is highly sensitive to economic cycles, as seen when the extraordinary growth of the technology sector during the late 1990s gave way to an equally precipitous decline in the early 2000s. Despite these ups and downs, the region has continued to attract newcomers from across the US and around the world, with its population increasing by 10 to 15 percent each decade for the past 35 years, and housing prices have remained high.

The Metropolitan Transportation Commission (MTC) has coordinated, planned, and funded transportation projects in the Bay Area since its creation in 1970. A creation of the California legislature, it acts as the regional Metropolitan Planning Organization (MPO), for the US federal government, as well as the Regional Transportation Planning Agency (RTPA) for the state government. Both roles designate the MTC as the body that plans the Bay Area's transportation framework and doles out federal, state and regional funding among its counties, transit agencies, Congestion Management Agencies (CMAs), and municipalities.



Major infrastructure needs, continued population and job growth, an administratively fragmented metropolitan area (consisting of over 100 local municipalities), and a limited tax base for local and county governments mean that scarce capital funds must be pooled region-wide to support facilities with regional impacts. In addition to its planning responsibilities, the MTC manages seven toll bridges, develops and supports transportation technologies, and lobbies for federal and state transportation funds. Lower levels of government rely on the MTC's financial, technical, and administrative support to develop new transit infrastructure and maximize its land-use impacts.

The current transit financing framework is similar to that in place in 1988, when the MTC passed Resolution 1876. This resolution put state and federal capital funding in a pool with sales taxes, Bay Area bridge tolls, funds from the San Francisco-Oakland International Airport, BART (a regional heavy-rail transit system), and the three-county Joint Powers Board that oversees the Caltrain commuter line between San Francisco, San Jose and points south (Lydon 1999).

The most controversial issue among the 1876 projects was the BART extension to SFO Airport that opened in 2003. Ridership on the \$1.5 billion dollar line has come in far below projections, partly because of a downturn in air traffic and partly because the 2000-2002 high-tech industry slump sharply cut commuter flows to Silicon Valley and the Peninsula. These problems led the MTC and the transit agencies to focus on avoiding poor ridership outcomes and replicating the successful approach of pooling funds from various sources when planning for a new round of transportation investments (MTC 2005).

In the absence of a regional land use planning framework, growth planning has taken place through collaboration among regional agencies. The 2002 Smart Growth Strategy/Regional Livability Footprint Project set up a common base from which these agencies could create regional smart growth policies (ABAG 2002). By 2005, the MTC's Transportation 2030 Plan included a "Transportation/Land Use Platform" that set out basic smart growth principles as guidelines for the rest of the plan (MTC 2005a). At the same time as these local models were being developed, the state and federal governments were actively examining different TOD strategies used in the Bay Area (California BTHA/Caltrans 2002, Lefaver et al 2001).

In 2004, the MTC began developing a regional TOD policy leveraging mechanism to combine the lessons of earlier transportation funding rounds with a smart growth framework centered on the relationship between transportation and land use (MTC 2005b). When the policy was passed in 2005, the MTC employed the mechanism of a density threshold for each corridor, to enable flexibility along the route of the new transit corridors laid out in the 2030 plan, and set strict land use conditions for corridor municipalities (MTC 2005c).

The TOD policy and its strong leveraging element is, in no small part, the result of years of lobbying and public engagement efforts by the Bay Area's environmental and transportation advocacy organizations. The Transportation and Land Use Coalition (TALC) pushed the MTC to maintain and expand the TLC and HIP programs (see "Linkages") when developing its 2001 plan. In 2005, TALC joined with the Greenbelt Alliance (an open space advocacy group) and the Non-Profit Housing Association (the region's affordable housing stakeholder organization) to focus public pressure on the MTC to include high and enforceable density targets for station areas. Now called the Great Communities Collaborative, this coalition is playing an active role in facilitating specific station area planning processes funded by the MTC: the Hillcrest Avenue and Railroad Avenue specific plans for eBART stations, the San Leandro BRT station, and downtown Santa Rosa (GCC 2005).

Description of the Instrument

The TOD policy applies to projects on the Resolution 3434 list that are new transit corridors or extensions of existing corridors, and which were not already at a certain level

of density, shown shaded in grey in Table 12. Its approach consists of three elements: corridor thresholds, local TOD plans, and corridor working groups.

Table 12: Transit extensions subject to the TOD policy

Project	Technology	Cost (2001 \$M)
BART: Fremont to Warm Springs	Rapid transit	634
BART: Warm Springs to San Jose	Rapid transit	3,710
MUNI Central Subway	Light rail	647
BART/Oakland Airport connector	Automated guideway	232
Caltrain downtown extension/New Transbay Terminal	Electric commuter rail/bus	1885
Caltrain Rapid Rail/electrification	Electric commuter rail	602
Caltrain Express, phase I	Electric commuter rail	127
AC Transit Oakland/San Leandro BRT, phase I	BRT	151
Regional express bus, phase I	Commuter bus	40
Dumbarton Rail	Diesel commuter rail	129
BART: East Contra Costa extension	Diesel light rail	345
BART: Tri-Valley extension	Diesel light rail	345
Downtown to East Valley: Light rail & BRT, phases I and II	Light rail/BRT	518
Capitol corridor, phase I expansion	Long-distance rail	129
Sonoma-Marin rail	Diesel commuter rail	200
AC Transit enhanced bus, Hesperian/Foothill/MacArthur corridors	City bus	90
Altamont Commuter Express service expansion	Diesel commuter rail	121
Caltrain Express, phase II	Electric commuter rail	330
Capitol Corridor, phase II expansion	Long-distance rail	284
Expanded ferry service, phase I (SF to Alameda/Oakland/Harbor Bay, Berkeley, So. SF)*	Ferry	?
Expanded ferry service, phase II (Alameda to So. SF; SF to Hercules, Antioch, Treasure Isl., Redwood City, Richmond)*	Ferry	?

*Ferry plans not included in original Resolution 3434 projects; TOD corridor requirements will apply to new terminal facilities

Source: MTC

For each corridor, the MTC set a “corridor threshold”, which corresponds to the average number of new households per station area for a transit extension of a given mode (Table 13). The thresholds are based on the capacity of the proposed lines, the existing development within a half-mile radius of the proposed stations, and the potential to develop vacant or underused properties within the same area. The threshold

applies, as its name suggests, to the entire corridor – while average station densities must be within certain limits, the policy does not mandate specific densities around the stations, merely that the corridor must, taken as a whole, be planned and zoned to accommodate a certain number of new residents. Below-market rental or owner-occupied housing units each count for 1.5 housing units in meeting the threshold.

Table 13: Corridor thresholds per station

Mode	BART	Light rail	Bus rapid transit	Commuter rail	Ferry
Threshold	3,850	3,300	2,750	2,200	2,500*

* Ferry terminals are treated on a case by case basis, with a minimum requirement of 2500 housing units within a half mile of ferry terminals where development is feasible.

Source: MTC

Municipalities are responsible for developing station area plans of sufficient density so that the corridor meets its overall threshold. The station area plans are to include common TOD features (pedestrian- and transit-friendly design standards, improved streetscapes, station access, mixed uses, etc) and establish an implementation process, including zoning changes. To work out which densities will be required at which stations to achieve the overall corridor threshold, the TOD policy mandates Corridor Working Groups. Led by county transportation agencies, the working groups bring together municipal representatives from corridor cities with staff from the Association of Bay Area Governments, the MTC, and the local transit agencies.

Once working groups have assigned densities to the different stations, municipalities have drawn up initial station area plans, and transit agencies carried out their Environmental Impact Review processes, the results are evaluated by the MTC to certify that the threshold has been reached. After a second round of more detailed work to finalize the plans, the local policies and implementation mechanisms are approved by the MTC, and construction can begin. Until station

area plans have been implemented (i.e., zoning changes have been made) that bring the corridor to the required density, the MTC will not release regional discretionary funds to begin building the transit project.

In the suburban city of Pittsburg, the Railroad Avenue station on the planned eBART line lies in an industrial and residential area that is immediately south of Pittsburg’s downtown urban revitalization area (CoP 2005), and is the site of the new City Hall. The 22-mile diesel light rail line was planned to run from the existing BART terminus in western Pittsburg, along the median of Highway 4, and then over the highway to connect with an existing Union Pacific rail line through the city of Antioch and on to the developing semi-rural community of Byron. The eBART corridor was selected as one of the first to employ the new TOD policy process, given the line’s suburban location and high station area redevelopment potential (Calthorpe Associates 2005). The City of Pittsburg received \$308,000 from the MTC to develop a station area plan, and to develop the Ridership Development Plan that BART requires for municipalities receiving BART extensions (Nelson/Nygard 2006, CoP 2007).



Linkages

The MTC bundles funds from various state and federal sources to fund the capital projects of the region's transit operators, and to support TOD around existing and new transit stations. Some existing programs were used as the model for the TOD policy, or were folded in to the new framework. The Transportation for Livable Communities (TLC) program has funded local government work on TOD projects since 1998. TLC's three components included planning grants, capital grants, and a Housing Incentive Program intended to increase station-area densities. All required matching funds from local municipalities, usually a minimum of 11.5% for federal funds or 20% for state contributions (MTC 2004). MTC Station Area Planning Grants have been introduced to supersede the TLC Planning Grant program and incorporate its approach into the new projects subject to the TOD policy, while TLC Capital Grants and the Housing Improvement Program have continued.

Between 1997 and 2005, the MTC gave out \$2.6 million in funding as TLC Planning Grants for Bay Area municipalities to pursue smart growth planning projects, generally neighbourhood plans, station area plans, and bus corridor plans (MTC 2005d). TLC Planning Grants funded 67 projects, primarily improved streetscape designs and area planning concepts. In parallel, a TLC Capital Grants program was created in 1998 to support pedestrian-oriented streetscape improvements; it has completed 70 projects so far and 11 more are planned through 2009, totaling \$109.4 million in funding (MTC 2006, MTC 2006a). The Housing Incentive Program (HIP) was started in 2000 to help establish supportive residential densities around selected transit stops by funding more elaborate streetscape improvements and infrastructure upgrading. The 2005 funding cycle expanded the program to include 41 projects, and funding will total between \$30.1 and \$44.6 million depending on the final scope of the projects (MTC 2005e, MTC 2005f).

The TLC planning grants were supported by state and federal funding frameworks. The

>> San Francisco residential area



MTC is using the same funding streams to support the transit extensions and the TOD policy, and the approach is generally the same: the MTC has state and federal authority to develop regional transit plans, and uses them to direct state and federal funding to county transportation agencies and municipalities in ways that reinforce ridership on the new corridors.

The principal state funding channel for ongoing transit funding is the California Transportation Development Act (TDA). TDA funds come from state sales tax revenues; each county is apportioned 1/44 of the sales taxes the state collects within its boundaries, and the state distributes the money through the multi-county Regional Transportation Planning Agencies (RTPAs) (SACOG 2005). In the case of the Bay Area, the MTC functions as the RTPA, setting its own policies for how the state TDA funds are managed regionally and distributed between the MTC itself, the county transportation agencies, the Congestion Management Agencies, and the transit agencies.

The US federal government makes its contributions through the Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality (CMAQ) program, both part of the principal federal transit and highway funding package now known as SAFETEA-LU (formerly ISTEA and TEA-21). As the MPO for the Bay Area, the MTC receives and distributes its federal SAFETEA funds according to its 2030 Transportation Plan. For the TLC program, the MTC keeps a portion of the SAFETEA planning funds with which to make its own contributions, and forwards the rest to the county transportation authorities (MTC 2005g, MTC 2006a).

Outcomes

Table 14: Current MTC TOD planning grants

Corridor	City/station	Grant
Ferries	Alameda Point	\$221,000
eBART	Pittsburg/RR Ave eBA	\$500,000
Dumbarton	Menlo Park Dumbarton Rail Station	\$225,000
tBART	Hacienda Specific Plan	\$115,000
BART to San Jose	Santa Clara BART station	\$600,000
East Bay BRT	San Leandro Downtown BRT Station	\$450,000
SMART (planned rail)	Santa Rosa SMART Station	\$450,000

Source: MTC

As of 2007, the first station area plans are in various stages, and preliminary engineering work on the precise corridor alignments is moving ahead. A thorough interim review of the policy was completed in July 2006, which noted that although it is still very early in the planning process, there is an overall willingness on the part of municipalities to conform with the MTC's conditions in order to obtain needed transit investment. The station area planning grants were singled out as a particularly successful component of the project: "it is clear that the TOD policy as a whole is changing the way in which local jurisdictions think about and plan for their stations, focusing their attention on station area development and access, and calling attention to the need for land-use intensification in station areas" (Nelson/Nygard 2006, ES-7).

- In Santa Clara County, the VTA is carrying out area TOD studies for the proposed BART San Jose extension station stops. So far, the Milpitas (CoM 2007) and Santa Clara (CoSC 2007) station area plans are most advanced.
- The eBART line has bogged down in technical and scoping issues, which have increased its budget and delayed the start of work (BART 2005). The City of Pittsburg has already held public consultations on its station area plan, and council is due to approve it imminently (CoP 2007).
- Along the proposed tBART corridor, the Hacienda Station Specific Plan is being carried out by an East Bay community group and the business owners' association in the Hacienda business park. The City of Pleasanton has prepared and reviewed land use plans for the business park (HBPOA 2007).
- For the East Bay BRT Corridor, AC transit has carried out a round of public hearings on the EIR (AC Transit 2007), while San Leandro has used its grant to fund an active Citizen's Advisory Committee and conduct several public sessions that led to the adoption of a new station area plan in late 2007 (Urban Habitat 2007).
- SMART has been stalled by a setback in a 2006 sales tax measure, but will put a revised plan before the voters in 2008. In Santa Rosa, the Station Area Plan and EIR were approved by the city in fall 2007, and the redevelopment plan will go ahead despite the delays in introducing SMART (CoSR 2007).
- Planning for new ferry terminals is at various stages in different parts of the region (MTC 2007). The city of Alameda was far along in its MTC-funded planning process when its developer had to pull out of the project, but has recently selected a new developer (SF BCDC 2007).

Assessment

While the MTC is not in a position to directly dictate land use regimes, it can act as a forum in which to put federal, state and local funding together with regional political coalitions to influence land-use decision-making by lower levels of government. The funding the MTC provides to municipalities to execute its TOD framework was cited by all interviewees as the key to the program's success. Providing municipalities the opportunity to do thorough, forward-looking planning has been essential in bringing local councils and governments onside; in turn, the greater amount of public communication and consultation that these municipalities have been able to execute has helped win over often-skeptical neighbours and communities. Municipal stakeholders were tremendously enthusiastic about the planning grants and the program's overall flexibility, characterizing it as a "phenomenal" experience that permitted their communities to move "light-years ahead" of where they could be otherwise.

Similarly, all interviewees were positive about the public's response to the TOD processes. The Bay Area's reputation for progressive politics and environmental sensitivity is, according to them, a reality that local governments are wise to recognize (if sometimes only in the breach). The population "gets it" overall about the TOD idea, and the presence of existing higher-density neighbourhoods in the region forms a living example of their potential. Programs that aim to increase the financial viability of transit service and boost the local tax base, as the TOD program does, are popular with tax-shy California voters. The Bay Area's vigorous network of civic, environmental, social and advocacy organizations, supported by strong and innovative charitable foundations, was cited as an important asset in pressing for enforceable, achievable ridership and land use outcomes from transit investment.

The corridor working group approach, intended to bring about horizontal and vertical collaboration between corridor

municipalities, counties, transit operators and the MTC, is not generally considered a success. One exception was the eBART corridor working group, which functioned well during the early stages of that project only to stumble when outside engineering issues threatened the viability of the planned route. In most instances, however, municipalities found a simple per-station average to be a workable and relatively uncontroversial number, so horse-trading between municipalities to obtain locally acceptable densities was unnecessary. Vertical cooperation between municipalities and the regional bodies was, however, a success, and municipal interviewees reported excellent cooperation and support from the MTC, BART and county transit agencies in their station area planning efforts.

Advocates reported that some municipalities perceived the station density targets as an exact number to aim for or a density ceiling, rather than a base from which a municipality could potentially work upwards. In any case, the idea of targets supported by planning grants was perceived as a step forward from what one interviewee termed the traditional top-down approach of "old-time, ram-it-down-your-throat politicians". The affordable housing density credit, intended as a "carrot" to induce density-shy municipalities to pursue affordability objectives instead, has not made an impact. Affordable housing is subject to elaborate state and federal requirements, and the processes involved are so complex that municipalities feel that they are best pursued separately.

Success factors include:

- Financial support for station area planning exercises and community consultation keeps lower-level governments and populations happy with the process;
- Broad acceptance of the overall formula of increased densities and improved transit service;
- Uses transportation money as effective leverage to create better regional land-use outcomes in the absence of region-wide land use planning.

Challenges include:

- Outside of established centers, employment areas are difficult to implement before transit is in place;
- Moving quickly to create TOD plans is expensive and administratively intensive, but delaying construction raises costs;
- Ongoing tensions between smaller and larger municipalities over corridor service and corridor impacts have not been mitigated by the corridor working group process.

Other Jurisdictions and Transferability

As a transportation planning and funding body that coordinates rival agencies and jurisdictions, the MTC has little power of its own and does not directly operate transit service. Its effectiveness in promoting smart growth stems from an ability to combine funding from local, state, and federal sources, which reflects its credibility and political heft in the region, in Sacramento, and in Washington DC. Canada's metropolitan regions often have tense relationships with their provincial governments, which are wary of the potential political clout wielded by powerful metropolitan governments. As a result, the regional planning bodies that cover Canada's larger cities often lack the political and financial strength that the MTC wields. Still, the MTC can provide valuable lessons in the way it leverages its capacities to increase station-area densities and bolster ridership.

In Vancouver, regional transit planning and operations are combined in Translink, while Metro Vancouver, which handles regional land use planning, does not have the authority to mandate that lower-level governments execute its plans. Metro has the option of refusing to service areas where municipalities have permitted development that violates regional objectives. Instead of taking such action, however, the regional authorities have chosen to adapt, extending transportation facilities even when they violate its own growth goals (Tomalty 2004). Transit investments, such as the Millennium Skytrain line, have been made with an eye on political results rather than land use impacts or financial performance. Regional agencies that offer better regional

support for station area planning, and that can hold recalcitrant municipalities accountable for improving land use and ridership, could help maximize the effect of transit capital spending and maintain regional support for a smart growth framework.

In Montreal, the Agence métropolitaine de transport operates the regional commuter rail system, along with some express buses, park and ride lots, and regional bus terminals, while the Communauté métropolitaine de Montréal handles regional land use and transit planning. While the AMT has successfully created new commuter rail lines to the suburbs, they are oriented toward peak demand and auto-centered development has persisted, dispersing the stable regional population further out into low-density areas.

In Toronto, the newly-formed Metrolinx authority will handle metropolitan transit planning and financing for the regional transit operators already in place, and may take over the existing GO Transit network of commuter rail and buses. Ontario's Places to Grow plan puts some land out of bounds for low-density development, but does little to mandate higher densities in the proposed concentration areas. GO Transit stations are frequently surrounded by parking lots, relieving highway congestion but failing to focus growth at the heart of suburban communities, and the province's mammoth MoveOntario plan attaches zero land-use conditions to \$18 billion of Toronto-area rail investments.

In both Montreal and Toronto, provincial governments have been reluctant to confer new tax powers and planning enforcement authority to municipalities and regions, so much regional transportation and land use planning has come and gone with little impact on growth patterns. Placing firm land-use commitments on area municipalities would pressure municipal as well as regional governments to evaluate their planning efforts and transportation investments more seriously. A bottom-up commitment by area municipalities to pool the revenue streams that they do control, coupled with greater willingness on the part of the federal and provincial governments to direct funding through regional agencies, would permit those agencies to make strategic transit



investments and back them up with better development patterns.

Calgary and Edmonton, whose regional coordination bodies were dismantled in the 1990s, offer virtually no incentives to developers to invest in more sustainable housing forms and receive little support from the Alberta government to expand transit. Alberta transfers 5 of the 9 cents it collects on gasoline sales in Calgary and Edmonton back to those cities, but applies no conditions to the money. However, infrastructure needs and the limitations of the conventional development model are becoming very evident in these booming areas, and more narrowly constituted regional authorities, such as transportation boards with control over fuel tax or other revenue sources, may be a more politically palatable way to address these issues than generalized regional governments. If regional authorities can exert their influence by combining provincial and federal funding with local or private-sector contributions, they can get stakeholders to cooperate on smart growth without wielding formal land use planning responsibilities.

In the 2005 budget, the Canadian federal government introduced a Gas Tax Fund to transfer a portion of federal gas taxes to municipalities and urban regions. Eligible projects include transit corridors, transit equipment, and roads that “enhance sustainability outcomes” (Infrastructure Canada 2005). The mechanism for disbursing the funds varies based on the different agreements struck between the federal government and each province, but in each case the municipalities are required to complete an “integrated community sustainability plan”. While the specific elements that make up the sustainability plan varies depending on the particular provincial agreement (and the Quebec agreement makes no mention of any local planning effort), the plans themselves, and additional resources that municipalities may need to create them, are eligible for funding from the gas tax. Federal-provincial agreement on requiring ambitious and achievable transit ridership increases and land-use changes would ensure that these sustainability plans have real effect. Helping municipalities to

plan and execute for better development patterns can smooth opposition to top-down mandates and permit local flexibility in meeting provincial and national goals, while maximizing the environmental returns on a politically contentious investment.

Resources

INTERVIEWEES

Ayres, Melissa
Director of Planning
City of Pittsburg
(925) 252-6933
mayres@ci.pittsburg.ca.us

Corless, James
Senior Planner
Metropolitan Transportation Commission
(510) 817-5709
jcorless@mtc.ca.gov

Fergusson, Kelly
Mayor
City of Menlo Park
(650) 207-9334
kjfergusson@menlopark.org

Hobson, Jeff
Policy Director
Transportation and Land Use Coalition
(510) 740-3150
jeff@talc.org

Livermore, Kathleen
Interim Planning Manager
City of San Leandro
(510) 577-3350
klivermore@ci.fremont.ca.us

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A-8 Fuel Tax Transfers, Edmonton, AB

Summary

In 2000, the City Transportation Fund (CTF) was established by the provincial government to help Alberta's major urban centres cover capital transportation projects, as recommended by the 1999 Premier's Task Force on Infrastructure. Projects eligible for funding include primary highways, major streets and public transportation systems. Under the CTF, the Cities of Calgary and Edmonton are each eligible for a grant based on five cents per litre of the gasoline and diesel fuel delivered to service stations and bulk fuel outlets within the respective cities.

With the 1999 Edmonton Transportation Master Plan calling for the expansion of high-speed transit corridors, the City had been considering funding options to expand the LRT line southward. Funding for Phase 1 of the South LRT expansion (SLRT), which opened in January 2006, was secured in part using provincial fuel tax revenue through the CTF. The cost of the extension was \$108 million, of which \$76 million was provided by the CTF.

Phases 2 and 3 of the 7 km SLRT extension from Health Sciences to Century Park are being funded predominantly through a federal grant program, which also allocates a portion of (in this case, federal) fuel taxes to help municipalities fund transit and other sustainable capital infrastructure needs. The New Deal for Cities and Communities (NDCC), which was established in 2005, is allocated on a per capita grant allocation to municipalities via the province.

While grant funding from fuel tax transfers has proven to be an effective way for the City to invest in public transport, there are a number of challenges facing the future of LRT funding and support in Edmonton. Administrative challenges among the three levels of government and within the municipality itself present significant obstacles to achieving stable and sustainable funding for public transit in Edmonton. Greater certainty in federal funding and local policy commitments linking transportation and land-

use planning would help consolidate regional planning around smart growth principles for the City of Edmonton.

Background

The City of Edmonton has a population of 836,372, with 1,034,945 living in the metropolitan area (Statistic Canada, 2007). Edmonton's growth rate is the fourth highest in Canada (at 10.4 percent since 2001) due largely to continued growth in Alberta's natural resources industries. The increase in population and housing needs continues to put upward pressure on housing prices and worsens traffic congestion in the city.

Facing unique fiscal challenges related to expanding City services and infrastructure to accommodate demographic shifts to supporting local public transportation operations and capital projects, the Mayors of Edmonton and Calgary approached the Province of Alberta for assistance in 1999. Later that same year, Premier Klein responded to their concerns by creating a task force to come up with a solution to fix the municipal infrastructure funding gap. The task force included the premier, both mayors, Alberta's municipal associations and the provincial ministries of transportation and municipal affairs.

As recommended by the task force, the City Transportation Fund (CTF) was established by the province in 2000 to provide funding to the City of Calgary and Edmonton for capital transportation projects (Bob Rebus, personal communication). An agreement was reached between the Province of Alberta and the Cities of Calgary and Edmonton to transfer 5 cents of the provincial excise fuel tax for each litre of gas or diesel sold in the respective cities to the CTF, for dispersal to the cities through a grant application process.

The only major stipulation from the province was that grant funding must be used to fund transportation projects such as transit projects, highways and major streets in the two cities. Transportation projects are only eligible for

funding through the CTF if they are included in the city's transportation policy plan.

According to the Transportation Association of Canada, political support from Premier Ralph Klein was key in developing fuel-based funding for municipal transportation needs (Transportation Association of Canada, 2002, p. 4).

The Edmonton Trolley Coalition and the Citizens Action Centre also supported the use of fuel taxes to help fund Edmonton's public transit system, in part because of the various smart growth benefits of high quality transit compared to auto-based transportation investment. These benefits include the reduction in land required to build right of way for transit, fewer vehicles on the road, lower energy consumption, as well as the reduction in greenhouse gas emissions and air pollution (Citizens for Better Transit, 2007).

Description of the Instrument

CTF funding is generated through the Alberta Fuel Rebate Program, which collects 10 cents per litre of fuel at wholesale distribution points in Calgary and Edmonton and then rebates 5 cents to the CTF. This money is then made available to the municipalities in the form of transportation grants (Government of Alberta, 2005). The other five cents of the Alberta Fuel Rebate Program goes into the Alberta Government's general coffers.

The fuel tax sharing tool was chosen as a way to ensure stable and earmarked funding for municipal transportation projects. There is only one case where CTF funding has been used to finance a major transit project: the expansion of Edmonton's LRT line to the new Health Science station in 2006.

The City chose to take the line south where ridership projections exceeded those in all other quadrants of the city (Wayne Mandryk, personal communication). On January 18, 2000 Edmonton City Council unanimously approved the recommendation to proceed with planning of the South Light Rail Transit extension from University Station to Century Park Station.

In 2002, the City approved a \$108 million budget for the first leg of the expansion, which would see the line extended the line from University Station to the Health Sciences Station. The CTF funded \$76 million of this budget, although the ongoing South LRT expansion past Health Sciences Station is being funded primarily by the federal New Deal for Cities and Communities, which is a transfer from federal fuel taxes.

The 0.6 km line extension to the new Health Sciences Station (Phase 1) travels under St. Joseph's College and the University of Alberta's Education Car Park. The line then surfaces across from the University of Alberta Hospital. Phase 2 and 3 of the South LRT will add a further 7.6 km to the line, reaching Century Park while passing McKernan/Belgravia, South Campus and Southgate stations by the end of 2009 (see Figure 2).

Figure 2: SLRT expansion stations



Source: <http://www.edmontonslrt.com/images/map.gif>

Funding levels for transit via the CTF have fallen considerably since the introduction of federal funding for urban transit through the New Deal for Communities and Cities (NDCC). CTF grant money continues to be allocated to transit projects, although on a much smaller scale, covering expenditures for transit vehicle replacement and light infrastructure refurbishment to existing lines and stations.

Administrative Aspects

The initial application for CTF funding is submitted by the City to the Province through the City of Edmonton's Capital Finance Committee, which is responsible for approving each grant application and making sure CTF conditions are met before submitting the application to council for final approval (Wayne Mandryk, personal communication). There are roughly 25 full-time employees working in the Capital Finance Committee, which also investigates other possible funding sources to help fund infrastructure investments.

In addition, the Office of Infrastructure and Funding Strategy works with other levels of government, as well as the private sector and other government agencies (including the Capital Finance Committee) to investigate funding options for infrastructure projects for the city (City of Edmonton, 2007).

In the case of funding that is earmarked for public transit, fuel transfer funds are allocated through the Streets Engineering Department, which acts as the conduit for transferring provincial funding to various projects, which are in turn managed by the City of Edmonton's Transit Projects Branch.

Linkages

In Edmonton, all investments in public transit are guided by the current Transportation Master Plan (TMP), which was adopted by the City in 1999. This plan sets out transportation policies and projects within the broader context of the City's Municipal Development Plan, 1998.

Specifically the TMP calls for the development of high-speed transit corridors to help manage traffic congestion, give the public a

greater range of travel options, and reduce the community and environmental impacts of expanding the transportation system. Many observers noted, however, that the current TMP is currently out of date and needs to be updated in order to be an effective policy reference guiding the application of smart growth principles.

Funding for Phases 2 and 3 of the SLRT expansion are going ahead with funding from the New Deal for Cities and Communities introduced in the 2005 federal budget. Edmonton's share of the NDCC for the first five years is \$107,738,238 while Calgary will receive \$140,921,286 based on population data from census 2006.

The City of Edmonton is choosing to earmark these federal fuel tax monies specifically for mass transit, in order to create a stable base funding that would reduce investment risk and encourage denser urban development.

Financial Aspects

The South LRT extension from the University of Alberta to Health Sciences Station cost \$108 million, which included \$100.1 million for construction and \$7.9 million for design and property acquisition for the next phase of the extension.

All three levels of government contributed funds, including \$76 million from the Alberta Fuel Rebate Program (through the CTF) in addition to \$26 million from the 2000 Infrastructure Canada-Alberta program (funded equally by the Government of Canada, the Government of Alberta, and the City of Edmonton) and \$6 million from the City of Edmonton's general financing (City of Edmonton, 2006).

According to the manager of the Transit Projects Branch, 4-5 staff were required to manage LRT construction funding for the Health Sciences Station extension and \$6 million from the City of Edmonton's in general financing was used to cover administration, land purchases, as well as engineering and insurance costs. From the provincial end, the CTF grant program is managed by two regional urban engineers





who are responsible for the allocation of grant funding to each of Calgary and Edmonton through the Alberta Department of Infrastructure and Transportation.

In 2003, the City of Edmonton committed itself to raising the amount of money spent on transit through the CTF from 23 percent to 30 percent during the 2004-2008 period, which would have amounted to \$111.9 million for transit projects, including LRT expansions (City of Edmonton, 2003).

After Canada's Big City Mayors successfully lobbied to receive a share of federal fuel taxes in 2005 (Mayor of Edmonton, 2003),

Edmonton City Council opted to use New Deal monies exclusively for funding public transportation. A large portion of this funding went to SLRT expansions, thereby allowing the City to dedicate most CTF funding to road and highway development in budgets following the introduction of the federal program. Thus, a lesser amount of the provincial fuel tax rebate made its way to transit projects in Edmonton after this point.

Table 15 shows the amount of CTF funding used for public transit over the past four years. Spending on transit averages 38.2 percent of CTF funds, well above the 30 percent commitment in 2003.

Table 15: CTF transit funding to Edmonton from the Alberta Fuel Rebate Program

Fiscal year	Total CTF funding	Amount of CTF funding for public transit	Percentage of CTF spent on public transit
2006	69.0 million	17.5 million	25%
2005	86.8 million	32.1 million	37%
2004	77.3 million	15.4 million	61%
2003	71.3 million	21.3 million	30%

Source: City of Edmonton Department of Finance

Phases 2 and 3 of the SLRT line to Century Park are being funded predominantly through the federal New Deal for Cities and Communities (NDCC). No CTF funding is involved in phases 2 or 3, although there is some provincial funding through the Alberta municipal infrastructure program. The breakdown of the \$595 million budget is as follows:

- \$562 million from the New Deal for Cities and Communities
- \$25 million from the Alberta municipal infrastructure program
- \$8 million from general municipal tax revenue for administration costs

While the federal government has promised a 10-year funding commitment, the federal budget is on a 5 year timeline. The fact that the City has committed itself to 15-20 year loans to fund the project adds to the financial insecurity of this project.

The uncertainty of federal funding has prompted City officials to create a “rainy day” fund to use in case federal funding does not come through. Contacts at Edmonton Transit say greater financial certainty would provide investors with the confidence they need to purchase and develop land around future LRT stations, consistent with smart growth principles.

Outcomes

Previous LRT expansions have shown that outcomes are very positive from a smart growth perspective. For example, there was a 36.5 percent increase in LRT ridership from 1991 to 1992 after the construction of the University of Alberta Station on the original northern line. The addition of this station saw ridership jump from 24,080 to 37,900 daily two-way passenger trips. The higher ridership reduced traffic congestion and emissions in the corridor while boosting the general quality of life.

The LRT South extension is expected to have a similarly beneficial effect (City of Edmonton, 2007b). By extending the LRT line south of the city centre, residents of this high growth area will be able to travel to major employers,

recreational facilities and essential services in other parts of the city. In fact, the City expects the LRT extension to double ridership by the time Phases 2 and 3 are completed in 2009 (City of Edmonton, 2005).

The extension is also expected to encourage denser urban development along the LRT line, thereby reducing the need to expand infrastructure to greenfield areas of the city (Chuan Kua, personal communication). In fact building plans have already been approved for a mixed-use urban village with an integrated transportation hub at the proposed Century Park Station at the end of the SLRT. Westbank Corporation, a Vancouver-based developer constructing the complex, says Century Park will contain 2,800 residential units accommodating 5,000 new residents to this transit-oriented development.

Assessment

In the opinion of the authors of a recent report to the Canwest Foundation, fuel tax transfers are a useful means of sharing the cost for an important public service among federal, provincial and municipal levels of government. The report argues that the advantage of fuel tax transfers is that they function through the application of an existing tax and are relatively easy to manage (Canwest, 2006).

A provincial contact noted that the CTF fuel tax sharing program is a successful financial tool because it is tied to fuel usage and therefore to wear and tear of the roads and other infrastructure (Bob Rebus, personal communication). The provincial provision that CTF funds must be spent only on projects mandated by a municipal Transportation Master Plan (TMP) indicates a synergy between funding and policy goals.

Many observers have noted, however, that policy priorities outlined in the TMP are currently out of date and urgently require updating in order to reflect Edmonton's current commitment to smart growth development. In a report published in 2007, entitled Focus Edmonton, the City itself acknowledged that policy commitments to smart growth are weak and need to be

strengthened through a review process. The report suggests that the shift towards smart growth principles and a greater commitment to developing public transit may be given a boost in 2008 when the City renews its Municipal Development Plan (MDP).

Developers have been encouraged by the use of fuel transfers to support public transit development. For instance, the developer behind the Century Park residential and commercial complex said the timeline of the project was reliable enough to go ahead with the development. The contact further noted that the City has worked collaboratively with the developer to project future transit demand and traffic flow to plan infrastructure development and save costs.

Since provincial and federal governments are the administrative units responsible for collecting fuel taxes, municipalities depend upon a strong commitment from other levels of government to ensure a stable revenue flow. There has therefore been a strong interest in developing legislative and budgetary commitments to create stable base funding for long-term transit projects.

The complexity in the administration of the grant at the municipal level, including long-range planning, reporting of outcomes and inter-departmental communication may add unnecessary obstacles to the effectiveness of the funding mechanism. A total of five municipal bodies were involved in the allocation of CTF grant funding for the Health Sciences Station extension, including: Transportation Planning; Streets Engineering; Transit Projects; Traffic Operations; and the Edmonton Transit System.

The factors that have contributed to the success of the fuel tax sharing program in integrating infrastructure financing and smart growth goals in Edmonton are:

- the political will on the part of the municipal, provincial, and federal governments to create a stable base funding for LRT expansions
- the provincial CTF is a relatively predictable and flexible funding source since cities are entitled to grant funding

every year, and is relatively easy to manage because it functions through the application of an existing tax regime

- fuel transfers make a clear connection between fuel usage and financing infrastructure development

The factors that have posed challenges or that act as barriers to a more effective integration of infrastructure financing and smart growth goals are as follows:

- administrative challenges among five different municipal offices, which are responsible for overlapping aspects of the CTF grant program
- uncertainty of federal funding may put future transit projects into question
- need for greater policy commitments linking transportation and land-use planning and environmental objectives in city-wide plans including TMP

Other Jurisdictions and Transferability

While the NDCC has been applied across the country as a means to transfer federal fuel tax revenue to municipalities for the purpose of funding transportation infrastructure, only the provinces of Alberta, British Columbia and Quebec have passed legislation supporting of the sharing of provincial gas tax revenue. Like Edmonton, Calgary benefits from a 5 ¢ per litre fuel tax. Both Quebec and British Columbia have introduced transportation taxes that are allocated directly to regional transit administrations (Albert, 2005).

Montreal's Agence Metropolitaine de Transport receives 1.5 ¢ per litre of gas sold in the Montreal metropolitan area, along with a \$30 surcharge on vehicle registration. This area regroups 82 municipalities with a total population of 3.6 million. The province introduced the gas tax in 1996 to replace subsidies for commuter rail and transit use by non-residents and the vehicle registration surcharge was put in place in 1992 to compensate for a reduction in the capital bus subsidy. The amount of the tax and surcharge has remained unchanged since their introduction over a decade ago (AMT, 2003).

In 2006, AMT revenues from gas tax and vehicle registration totalled \$100.6 M, representing 41.3% of the transit agency's revenue in that year (AMT, 2007). The gas tax funds are divided between the Société de transport de Montréal (56%), the regional network of trains and busses (24%), Agence Metropolitaine de Transport functioning and development (9%) and transit systems in municipalities surrounding Montreal (12%). The funds are used to finance commuter trains and busses in the metropolitan areas, the Montreal metro, infrastructure such as stations, parking, and reserved lanes, and to subsidize reduced fares for students and seniors.

The Province of British Columbia introduced a transportation tax on motor fuel sold in the Greater Vancouver transit service area in 1999. Along with a share of parking and property taxes, the transportation tax replaced a provincial subsidy for transit in this region, which includes 21 municipalities and totaling 2.1 million residents. As of April 2005, the transportation tax is 12 ¢ per litre of fuel (BC, 2007). The tax is transferred directly from the province to Translink, the Greater Vancouver Transportation Authority, which coordinates transportation of people and goods throughout the region. TransLink's mandate extends to transit development including ferries, busses, and commuter rail, maintenance and improvements of the major road network and bridges, transportation demand management and air quality control.

This tax allocated to TransLink is on top of a province-wide 6 ¢ tax that goes directly to the provincial British Columbia Transit Authority. However, the provincial tax on gasoline sold in the Greater Vancouver Area is only 1.75 ¢ per litre, compared to 7.75 ¢ in the rest of the province.

In 2006, TransLink received \$257.5 million in fuel taxes, representing 30.5% of their total revenues. Transit accounted for 65.7% of TransLink's expenses and major capital investments in 2006 included two Rapid Transit Lines (Canada line and Evergreen line), as well as bus and skytrain vehicle purchases (GVTA, 2006).

In Victoria, the regional transit system is funded through a partnership between BC

Transit and the Victoria Regional Transit Commission. The Commission receives 2.5 ¢ per litre of fuel sold in the Vancouver Regional Area. This area consists of 14 municipalities with a total population of about 330,000. The Victoria Regional transit tax was introduced in 1997 and applies in addition to a province-wide 6.75 ¢ tax that goes directly to BC Transit. BC transit holds funds in trust on behalf of the Victoria Regional Transit Fund (VRTC, 2006).

In 2006-07, the fuel tax raised \$8 M for transit in the Victoria region, representing 12% of the transit system's revenue needs. The provincial contribution accounted for 28% of the funding and other sources of income included passenger fares, advertising and property tax. Expenditures were on maintaining and expanding bus service throughout the region. In 2006, the Victoria Regional Transit Commission put a request to the province to raise the fuel tax by 1¢ in order to support a 35% increase in service over 5 years.

Resources

INTERVIEWEES

Betker, Ryan (P.Eng.)
Senior Transportation Engineer
Strategic Transportation Planning
City of Edmonton
(780) 496-1792
ryan.betker@edmonton.ca

Kua, Chuan (P. Eng.)
Transportation and Streets Division
City of Edmonton
(780) 496-1779
chuan.kua@gov.edmonton.ab.ca

Mandrick, Wayne
City of Edmonton
Transportation Planning Office
(780) 496-8118
slrt@edmondon.ca

Neal-Anshelm, Angie
Accountant: Transit Projects Office
Sr. Accounting Assistant: Grants Coordinator
Capital Budget
(780) 496-2645
angie.neal-anshelm@edmonton.ca



Pearce, Bob
Century Park Club and Residences
Westbank Projects Corporation
(604) 685-8986
vanja@westbankcorp.com

Rebus, Bob
Regional Urban Engineer
Province of Alberta
Department of Transportation and
Infrastructure
(780) 674-8221

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http://www.infratrans.gov.ab.ca/INFTRA_Content/docType607/Production/ndcc.htm

Federal Fuel Tax Act – Government of Canada
http://www.finance.gov.ab.ca/publications/tax_rebates/fuel/index.html

A-9 Tax Increment Financing, Portland, OR

Summary

Since 1958, the City of Portland has been using tax increment financing (TIF) to revitalize areas of the city that have difficulty attracting traditional market-driven development. Urban renewal projects funded mostly through TIF include the investment in public transit, cultural centres, educational facilities, historical landmarks, local businesses and affordable housing. The selection of projects is based on criteria determined by urban renewal advisory committees and must be approved by council.

The Portland Development Commission (PDC) is the public agency responsible for managing TIF as the primary instrument for financing urban renewal projects in Portland. PDC finances its investment in a urban renewal area (URA) finances by selling municipal bonds, which are gradually repaid with the “increments” in property tax revenues that flow from increasing property values in the target area.

In PDC’s hands, TIF has been widely seen as a highly effective vehicle for encouraging a more compact urban form and transit-oriented development. However, there have been a number of challenges underpinning Portland’s use of TIF, including the gentrification of neighbourhoods and higher housing costs. There has also been some concern about the narrow channel for participation in the urban renewal advisory committees and the tendency to finance capital projects that do not benefit a wide cross-section of society.

The case of Portland’s ongoing experiment using TIF therefore highlights the importance of supportive legislation and effective long-term planning in the context of a thorough public consultation process in order to set goals, collect fees and manage investments.

Background

The City of Portland is currently home to 537,081 inhabitants and 2.34 million people

live in the Portland metropolitan area located at the northern end of Willamette Valley. The Willamette River runs north through the city centre before meeting the Columbia River, which borders Washington State just north of the city.

The roots of Portland’s experience with TIF lie in the postwar expansion period. Unlike major cities in other western states such as California, Nevada and Arizona, Portland grew at a more moderate pace. In fact, during the 1950s Portland began to suffer from economic decline and rising unemployment, which was attributed in part to urban decay (Wollner, pg. 6).

In 1957, after Mayor Terry Schrunk was elected, he successfully pressured the Oregon Legislature to enact urban renewal laws, which would help council revive Portland’s municipal planning agencies as part of a larger strategy to stimulate local economic activity and investment. In May 1958, municipal voters approved the creation of an urban renewal agency and the Portland Development Commission (PDC) was born, becoming only the second jurisdiction in the US to establish an urban renewal program (after Sacramento California).

The first urban renewal project in Portland was the 109-acre South Auditorium Renewal Project, named after the Civic Auditorium located within its boundaries, located on the south edge of the downtown core. Federal funding made up two-thirds of the project financing while the rest was generated by tax increment financing (TIF), authorized by state voters in 1961.

Despite its initial popularity, TIF became less relevant through the 1960s and 1970s as urban renewal projects failed to stimulate the level of development needed to repay loans through increased property taxation. Urban development during this period was shaped by federal policies that focused on promoting large-scale clearances and single-use development. The application of this federal policy focus in Portland became so

unpopular that a city appointed committee called for the abolition of the PDC (Johnson and Tashman, 2002).

Rather than abandon the Portland Development Commission altogether, the City sought to reform the way urban renewal had been administered by adopting a new approach that focused on three pillars: a commitment to mixed-use planning, an eye for business development and the inclusion of community stakeholders throughout the planning and implementation processes (Wollner et al., 2005, p. 20). This policy shift led to a change in the way TIF was applied to urban renewal projects, allowing Portland to continue its urban revitalization program when federal funding began to disappear over the 1980s (Wollner et al., 2005, p. 9). The reduction in federal monies for housing and other local infrastructure projects prompted PDC to return to TIF for financing capital projects that promised to advance the local development agenda.

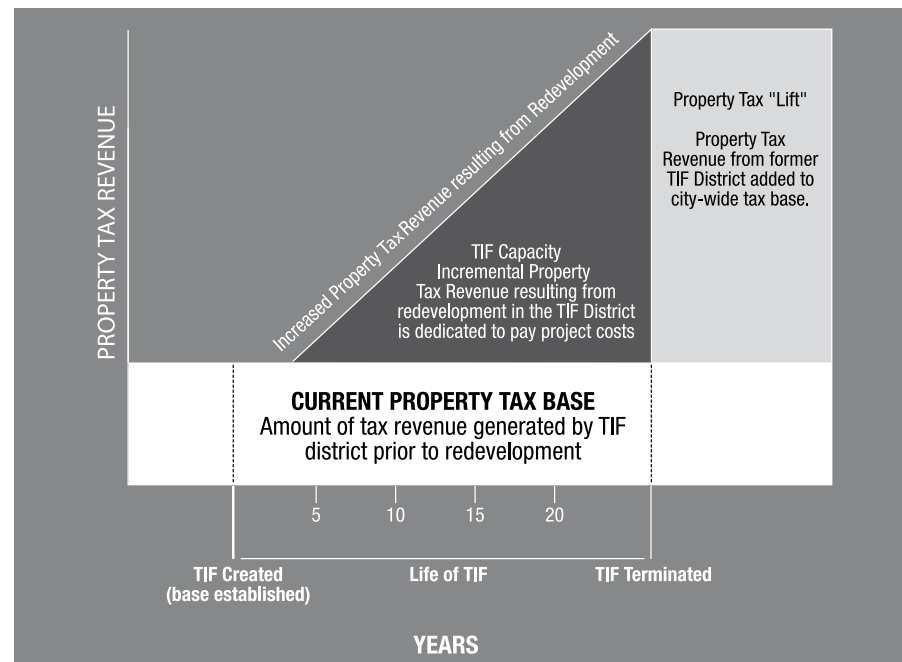
By 1990, the Oregon State Legislature imposed a restriction on property tax rates. This move, called Measure 5, was intended to stem the rise in property taxes as a result of high economic growth. Yet the cap put significant financial strain on PDC's ability to finance urban renewal projects as tax increments were to be used to repay urban renewal bonds (Wollner et al., p. 22). By 1997, the City managed to lobby for legislative changes allowing existing URAs to be grandfathered into the new system of rate payments. Special provisions were made to ensure municipalities were allowed to apply "special levies" to pay off existing bonds and complete existing plans. TIF was therefore reinstated at the primary source of funding for urban renewal projects (Ibid., pg. 9).

Description of the Instrument

TIF is the practice of using increased property tax revenues that result from public investment in a specified area to pay for that investment. The specified area is called a TIF district, or an urban renewal area (URA) in the case of Portland.

When a municipality adopts an urban renewal plan, the assessed value of property within the urban renewal area is fixed at current levels. As the City and the private sector invest in URAs, property values and therefore property tax revenues increase. The tax 'increments' are then used to repay the loans (municipal bonds) used to finance the initial investments (PDC, 2007). Figure 3 shows how property tax revenue used for local projects increases with assessed property valuation over time.

Figure 3: How does tax increment financing (TIF) work?



Source: City of Calgary, 2005; p.45

Through its urban renewal projects, Portland has used TIF to finance the renovation of existing buildings, the construction of community centres, transportation projects (including public transit), new housing units, green spaces and streetscapes as informed by urban renewal advisory committees.

There are four types of projects that have been funded (at least in part) by the use of TIF in

Portland's URAs (PDC, n.d.):

- 1) Redevelopment projects, such as projects near light rail that combine retail and residential components
- 2) Streetscape improvements, including new lighting, trees, sidewalks, pedestrian amenities, etc.
- 3) Transportation enhancements, including light rail, streetcar, intersection improvements, etc.
- 4) Parks and open spaces

A typical urban renewal area using TIF will expire after 20-25 years at which point PDC no longer issues new bonds to cover investments. Once redevelopment loans are paid off, the increased property tax revenue goes into the City's general revenue fund and the community reaps the fiscal benefits of an enhanced local tax base (PDC, 2006, p. 13). Since the City practices conservative fiscal management and is concerned about maintaining a strong credit rating, it is cautious about taking on debts it is unable to pay off. PDC claims that although other sources of funding have been used to finance URAs, the City has never had to rely on alternative methods of bond repayment for urban renewal projects funded by TIF (PDC, n.d. b, p. 5). Figure 4 illustrates the 11 existing URAs in Portland.

Figure 4: Urban Renewal Areas in Portland



Source: Portland Development Commission

An example of a TIF-funded project undertaken by the PDC is the South Park Blocks Urban Renewal Area (SPBURA), which was established in 1985 to encourage mixed-use residential and commercial development in the western half of the downtown. The target area consists of several downtown neighborhoods, including

the University District, the cultural district, Park Avenue district, and the west end. Table 16 shows the investment activities for the URA, the goal of each activity, and the capital expenditures associated with the activity. A total of \$113 million has been invested in the project, which expires in 2008.

Table 16: South Park Blocks Expenditures

Activity	URA Plan Goal	Amount
Development	maintain Portland as the employment, population, and cultural center of metro area	\$26 million
Housing	increase variety of downtown residential accommodation	\$46.5 million
Public Improvements	parking and circulation to serve all downtown activities	\$14.5 million
Economic Assistance	employment and support services to support a residential neighborhood	\$3 million
Personnel/Indirect		\$23 million
Total		\$113 million

Source: http://www.pdc.us/ura/south-park-blocks/south_park_blocks.asp

Administrative Aspects

TIF is calculated for each URA using a comprehensive urban renewal plan, which includes a detailed assessment of property taxation, inflation and depreciating capital costs. A contact at PDC noted the organization is able to accurately project revenue in order to adequately define debt coverage ratios and define a reasonable repayment schedule (Faye Brown, personal communication).

Linkages

The State of Oregon has played an essential role in the development of TIF in Portland by reviving Portland's planning agencies and passing supportive legislation for TIF as an instrument for stimulating infill development in 1961. Regional planning was also given a boost in 1973 when the state passed legislation mandating all municipalities to form urban growth boundaries (UGB).

The imposition of the UGB in Portland has deflected development activity from the urban fringe into areas already urbanized and has increased developer interest in URAs. This approach is an effective way to generate support for the application of smart growth

principles among government officials, real estate developers, financial institutions, property owners and residents making it easier to approve URAs and urban renewal projects.

Financial Aspects

PDC's total spending on urban renewal projects over the last four years has increased 167 percent (from \$93 million in 2002-03 to an estimated \$248 million for 2005-06). Total property tax revenue generated by PDC projects was \$73,547,737 in FY 2006-07, representing an increase of 11.9 percent over FY 2005-06 (PDC, 2007).

There are 11 continuing URAs using TIF to finance urban renewal projects in the Portland area. Two of these URAs (the Downtown Waterfront and South Park Blocks URA) will expire in 2008. According to PDC, the Downtown Waterfront Urban Renewal Area (DTWF URA) is one of Portland's most successful examples of urban renewal and tax increment financing. Assessed land values have increased an average of 10.4 percent annually, from a total of \$466 million at its creation in 1974 to more than \$1.6 billion in 2007.

TIF is the main source of funding behind Portland's urban renewal program,

representing about 65 percent of PDC's net annual budgeted resources. PDC also receives income from prior TIF investments in the form of property sale revenue and loan repayments. This "program income" amounts to approximately 15 percent of PDC's net annual resources in FY 2007-08. In addition to TIF revenue there is also other non-TIF income in the form of federal governmental grants (about 4 percent of PDC's annual resources).

PDC also uses a variety of small business loans, as in the case of the blighted area around the Oregon Convention Center to improve property value by attracting business development. Private capital investment also brings money into urban renewal projects. PDC claims that the amount of funds invested in urban renewal is small compared to private investment attracted to the district. In fact, 97 percent of the funding for the South Auditorium project came from private sources (PDC, n.d. c).

Departmental chairs and support staff carry out the day-to-day functions of managing the URAs including TIF accounts. However, due to the integration of TIF into administrative practices, PDC does not track administrative resources associated with TIF exclusively.

The approximate administrative budget for PDC in 2007-08 was \$32 million across all programs (roughly 15 percent of total PDC budget expenditures). PDC employs approximately 200 staff members are divided among various sectors of the organization including transportation, economic development, housing, and parks and recreation. Each urban renewal project also has its own staff overseeing each of these focus areas (Buerger, 2007).

Outcomes

While Portland's planning objectives have changed over time, the City has maintained compact urban form as a main development objective since the beginning of the urban renewal program in 1958. TIF has been instrumental in the development of smart growth infrastructure, including rapid transit expansions, high-density housing projects, mixed-use developments and green spaces.

Urban renewal plans using TIF have become more comprehensive with the creation of integrated plans to achieve smart growth objectives in communities. For instance the Gateway Regional Centre on Portland's East side contains the highest density zoning designations in the city and is serviced by light rail transit and thirteen bus lines. By 2015, PDC claims the Gateway area will be "the most accessible location in the Portland metropolitan region," with the highest density zoning designations in the city. Between 1999 and 2003, 10,000 new units were either built or slated for construction, which was a ten-fold increase over the period 1989-1999. (Wollner et al., 2005, p. 25)

In 2008, upon the 50th anniversary of Portland's urban renewal program, PDC will be conducting a comprehensive review of each urban renewal area. PDC says the review will help ensure that its investments are benefiting Portland's taxpayers by promoting a variety of affordable housing options, expanding employment opportunities for all of our citizens and encouraging positive development through the removal of urban blight.

Assessment

As discussed above, TIF provides the City with a stable source of funding through appreciating property taxation levels. However, PDC has been so successful in achieving the higher property tax rates necessary to repay redevelopment loans for these projects that some observers claim this success has squeezed out less affluent segments of the population through gentrification (Beurger, 2007).

With the rolling back of federal programs to support local housing and infrastructure development, the City has relied upon TIF as a means to help cover basic development costs but the benefits of this investment has been seen to be spread rather unevenly. Despite significant public pressure to improve access to affordable housing, the City has chosen development paths that fail to produce new units for low and middle-income residents.

According to PDC, much of the success of its urban renewal projects has been achieved by



community-level planning. Neighbourhood associations provide a forum for local citizens to engage with urban planners, local politicians and developers who in turn have identified the advantages of working together to achieve responsible economic development at the local level through the urban renewal advisory process.

Although no PDC review has indicated any major shortcomings of its public consultation process, a recent survey of urban renewal in Portland (Buerger, 2007) suggests citizens are given only a narrow channel of participation through urban renewal advisory committees. (Ibid. pg. 84)

According to a contact at Community Development Network (an organization committed to developing social housing in the Portland area), cities considering TIF ought to have strong policy checks in place to ensure the instrument is used to fund projects that have a wide public appeal. Anderson warned that local public officials often choose to use TIF to fund investments that benefit a narrow segment of society, such as low volume tramlines and parking garages, at the expense of social infrastructure, such as schools and affordable housing.

Buerger (2007) notes that it was not until 2006 when community pressure forced the PDC to pass a policy to set aside a specific portion of tax revenue (30 percent) from urban renewal projects using TIF to use for affordable housing in urban renewal areas.

The factors that have contributed to the success of Portland's TIF program in integrating infrastructure financing and Smart Growth goals are:

- the guiding principles of the TIF approval process include transit proximity, pedestrian accessibility, mixed-use development, and green spaces.
- Portland's urban growth boundary (UGB) helps streamline approval process and build consensus among stakeholders.
- enhanced tax based for long-term financing of infrastructure investment and maintenance.

The factors that have posed challenges or that act as barriers to a more effective integration of financing and Smart Growth goals are as follows:

- higher housing costs as a result of increases in property value.
- tendency to use TIF to finance capital projects that do not benefit a wide cross-section of the local population.
- citizens given only a narrow channel of participation through the urban renewal advisory committees.

Other Jurisdictions and Transferability

State legislation permits TIF in every US state except Arizona. Cities using TIF in the US include Chicago, Denver, and New York. While TIF is used for financing a wide variety of infrastructure and services, the establishment of a TIF district and the use of property tax increments to finance redevelopment projects is a standard feature of this mechanism.

One notable example of TIF usage in another city is the case of Arlington Heights, Illinois (40 km northwest of Chicago) where TIF was used to prevent commercial flight to outlying areas and revitalize the downtown business district. The project's success is attributed to the City collaborating with community residents, and public and private investors. In 2001, the project won the American Planning Association's (APA) Outstanding Planning Award for Implementation.

Some Canadian cities have begun using TIF to finance urban renewal. The City of Calgary, for example, has initiated a Community Revitalization Levy (CRL) to revitalize the Rivers District area east of downtown thanks to legislation passed by the Alberta legislature in 2005. As in the case of Portland, Calgary's urban renewal project will use increments in property tax assessment to finance the regeneration of an area of the city that has suffered from urban decay, environmental contamination and access problems.

In 2002, the Province of Manitoba also passed legislation allowing the City of Winnipeg to use TIF to finance urban renewal

projects, although no program has yet been established. Similarly, according to a Ministerial discussion paper, the Province of Ontario is also considering similar legislation to support TIF within its jurisdiction after passing supportive legislation in 2006. (Ontario Ministry of Finance, 2005) There is some discussion about using TIF to finance the redevelopment of the downtown waterfront in Toronto, although no specific projects have been proposed.

Resources

INTERVIEWEES

Anderson, Michael
Communications Director
Community Development Network
(503) 335-9884
mike@cdnportland.org

Barnes, Tony
Principal Budget Analyst
Portland Development Commission
(503) 823-3200
barnest@pdc.us

Brown, Faye
Principal Debt Analyst
Portland Development Commission
(503) 823-3200
fayeb@pdc.us

Stevenson, Sara
Executive Director
Innovative Housing Inc.
(503) 226-4368
sstevenson@innovativehousinginc.com

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Portland Development Commission,
Urban Renewal Primer
http://www.pdc.us/about_pdc/urban_renewal.asp

Portland Development Commission, South Park Blocks Overview
http://www.pdc.us/ura/south-park-blocks/south_park_blocks.asp

A-10 Tax Base Sharing, Minneapolis-St. Paul, MN

Summary

Minneapolis-St. Paul became the first metropolitan area in the United States to successfully implement a regional tax-base sharing program after the State of Minnesota passed the Fiscal Disparities Act in 1971. The basic idea behind the fiscal disparities program is that communities experiencing commercial or industrial (C/I) growth are required to share the benefits of that growth with other communities in the region. Under the program, each municipality contributes a portion of its tax base growth above the 1971 base year to a regional pool, which is then redistributed based on an index of relative need proportional to population.

The goals of the Minneapolis-St. Paul fiscal disparities program is to reduce competition among municipalities, improve the distribution of C/I taxes in reducing local inequalities, and support a regional approach to development. The fiscal disparities program has been largely successful in reducing inequalities in the commercial and industrial tax base. In so doing, the program has been seen to reduce competition among municipalities and even out property tax rates in the region. This tool has also had some smart growth benefits in that it reduces the competition among municipalities to attract business investment, and therefore undermines sprawl.

Tax base sharing has also been lauded for its adaptability in redistributing tax revenue to address specific regional goals. In the case of Minneapolis-St. Paul, however, the program has not been configured to reduce infrastructure costs or expand public transit as part of its objective to improve regional planning. A more effective regional growth boundary and the development of complementary fiscal tools have been identified as ways to improve the applicability of the fiscal disparities program to smart growth objectives.

Background

The Minneapolis-St. Paul metropolitan area has experienced steady population growth over the past 10 years: from 2,538,776 in 1990 to 2,968,806 in 2000, or a 19.6 percent increase. The seven counties in the metropolitan region include Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington as well as 188 towns and cities. There are also nearly 1,000 lakes in the region and three major rivers: the Mississippi, Minnesota and St. Croix (MRCC, 2007).

The legislative roots of the of the Minneapolis-St. Paul fiscal disparities program go back to 1968 when suburban school board member Warren Preeshl came up with the idea of tax-base sharing “as a way to keep decisions local but still overcome the problems of concentration of the tax base in certain communities as against others” (Orfield, 1997, p. 595).

In 1969 a Republican representative named Charles R. Weaver introduced state legislation allowing tax-base sharing in Minnesota. The bill was reintroduced in 1971 and passed both houses after having been rejected by the Senate in 1969. In a last ditch effort to stop the bill from becoming state law, opponents filed a suit against the proposed legislations on constitutional grounds. Despite these maneuverings, the fiscal disparity law went into effect in February 1975 after it was upheld by the court of appeals (Orfield, 1997, p. 144).

The Minnesota Fiscal Disparities Act was established as a means of mitigating converging economic factors that were putting an inordinate strain upon many municipal budgets in the region. These included increasing property tax rates, tax- base and tax-rate disparities, and inter-jurisdiction competition for commercial and industrial development within the region (Gilje, P., 2004; Orfield, 2002, p. 107). By transferring a portion of the growth in commercial and industrial property taxes to a regional pool, the fiscal disparities program

>> Minneapolis-St. Paul was the first metropolitan area in the United States to successfully implement a regional tax-base sharing program



was seen as the least offensive way of relieving these strains.

Description of the Instrument

The primary goals of the fiscal disparities program are to reduce competition among municipalities, improve the distribution of C/I taxes in reducing local inequalities, and support a regional approach to development. The basic principle behind the program, as announced by Met Council, the government body responsible for regional planning in metropolitan Minneapolis-St. Paul, all municipalities in the region ought to benefit to some degree from any new commercial or industrial growth because this growth is often a result of public investments made at the regional and state levels (Rusk 1999, 239).

The elaborate equalization strategy collects a portion (40 percent) of the growth in the property tax base arising from the area's commercial and industrial development and redistributes it back to the municipalities based on their assessed need proportional to population (Orfield, 1997; Katz, 2002). Commercial and industrial property growth includes both

new construction and inflationary increases in existing property values.

Each municipality charges a local and an area-wide tax rate for C/I property that is computed by dividing the municipality's contribution net tax capacity by its total C/I net tax capacity. Fiscal capacity is defined as market value per capita that is adjusted, or "equalized", by the assessment level of each municipality (Baker and Hinze, 2005). Municipalities that have lower than average market value per capita receive a share of the pool that is greater than their share of the regional population (Orfield, 2002, p.107). The fiscal disparities program is therefore in effect a partial fiscal capacity equalization grant scheme for towns and cities within the seven county region (Turnbull, 2002, p. 21).

The distribution of the net tax capacity from the area-wide tax base is determined by a distribution index based upon relative fiscal capacity. The following formula is used to calculate the Distribution Index as the basis of determining the level of contribution or distribution for each town or city within each of the seven counties of the Twin Cities area:

$$\text{Population of City/Town} \times \frac{\text{Average Fiscal Capacity}}{\text{City/Town Fiscal Capacity}} = \text{Distribution Index}$$

On average, the fiscal disparities program amounts to roughly 10 percent of the regional tax base. As shown in Table 17, Hennepin County was the only net contributing county with 54 percent of the net tax capacity in the regional pool and received 38.8 percent back through the program in 2004. On the other extreme, Anoka County was a net recipient receiving 12.9 percent and contributing 7.9 percent (Turbull, 2002).

>> St. Paul, Minnesota



Table 17: 2004 Metro Contribution and Distribution Values by County

County	Contribution value (%)	Distribution value (%)
Hennepin	54.0	38.8
Dakota	12.2	13.5
Carver	1.6	2.4
Anoka	7.9	12.9
Washington	5.4	7.0
Scott	2.6	3.1
Ramsey	16.4	22.3

Source: Baker and Hinze, 2005 p. 18

Wealthy suburban cities such as Minnetonka, Eden Prairie, Edina, Plymouth and Bloomington (which hosts one of the largest shopping malls in the US)²⁷ tend to be net contributing cities. Of the 187 towns and cities in the region, 50 are net donors and 137 are net recipients. (Rusk 1999, p.240)

Administrative Aspects

There are numerous administrative steps in determining the contribution or distribution value for each municipality overseen by the Minnesota Department of Revenue, which is responsible for calculating the net fiscal capacity for each town and city. However, the fiscal disparities program requires additional administrative tasks to be performed by property tax administrators at the county level. For instance, county officials meet regularly to establish timelines, coordinate data collection and reporting, and to decide how to manage changes to property tax legislation and other factors impacting

property taxes in the region. In addition, an administrative auditor (always from Charles R. Weaver's home Anoka County) calculates each municipality's distribution index and the area-wide tax rate.

Following calculations to determine contribution and distribution levies, the county treasurer remits a cheque to the administrative auditor for the amount owed if the total contribution levy exceeds the total distribution levy. If the total contribution levy is less than the distribution levy, the county treasurer receives a cheque from the administrative auditor, which is then distributed to the municipality.

Linkages

There are a variety of linkages between state and municipal governments in the application of the Fiscal Disparities Act in Minnesota. For instance, the Metropolitan Council was created by the State of Minnesota in 1967

²⁷ In 1986, the Minnesota state legislature introduced a special amendment to the fiscal disparities program to help spread the cost of highway development for the Mall of America. Between 1988 and 1999, the City of Bloomington received an amount from the regional pool equal to the interest paid on the bonds that were sold by the city for highway development.

to coordinate regional planning for the Minneapolis-St. Paul area and is responsible for evaluating the consistency of each municipality's community plan with the regional plan. This gives Met Council a role in determining how municipalities in the region spend receipts from the fiscal disparities pool. The current regional plan was adopted in 1997, and the next plan is due in 2008, as is the next regional transportation plan. Additionally, Met Council is responsible for determining which cities should not be eligible for participation in the fiscal disparities program.²⁸

The state also plays a role in guiding the implementation of the Fiscal Disparities Act through the Research Department of the Minnesota House of Representatives, which routinely investigates the performance of the tool and the administrative methods employed by the state and member municipalities.

The state has intervened in the program at various points such as in 2001 when it undertook a major change in terms of policy mandates and corresponding fiscal responsibilities between the state of Minnesota and its municipalities. The reforms included the elimination of the general education levy, the imposition of a state property tax levy, and reduction in commercial-industrial class rates. This "class rate reform" reduced municipal taxes by 21.7 percent and the fiscal disparities tax base dropped from 11.4 percent of the total tax base in 2001 to 10 percent in 2002.

However because fiscal disparities collection is proportional to C/I growth, the fiscal disparities pool continued to increase under favourable economic conditions. According to the Research Department of the Minnesota House of Representatives, the net effect of the fiscal disparities program on tax burdens is similar to what it was before the reform.

Financial Aspects

In 2007, roughly \$300 million was contributed to the metropolitan fiscal disparities pool, which represents approximately ten percent of the total tax capacity (LMC, 2007) and 31 percent of the total C/I tax base in the

seven-county area (Deb Detrick, personal communication; MSPMC, 2007). The regional pool can never be more than 40 percent because it is limited by the basic contribution formula of each city's 40 percent share of growth above the 1971 baseline level. C/I net capacity has grown from \$79.4 million in 1971 to \$775.2 million in 2003.

Over the past 32 years, the fiscal disparities program has been used to transfer tax revenue to general spending on municipal services and local infrastructure. In terms of infrastructure financing, general spending is used to cover road development and maintenance, street and traffic lights, pedestrian ways, public transit lines and other transportation related infrastructure. Of the 187 communities in the metropolitan area, over 100 have regional wastewater treatment services that are also financed by general spending (Deb Detrick, personal communication).

Outcomes

Law Professor and former Minnesota State Senator and House Representative Myron Orfield has written extensively on tax-base sharing. In a report to the Brookings Institute, Orfield (2002) found that the plan has been largely successful in narrowing regional tax rate disparities. Using a Gini-coefficient analysis, Orfield was able to show that the program reduced tax base inequalities by roughly 20 percent. Without the revenue sharing program, the per capita commercial-industrial tax base of the wealthiest jurisdiction would be 21 times that of the poorest; the program reduces the difference to 4 to 1.

Although the fiscal disparities program is not configured to finance or support smart growth infrastructure in particular, there may be some important linkages with the attainment of smart growth objectives. For example, the fiscal disparities program is believed to have helped reduce urban sprawl because of its impact on weakening the incentive to attract high tax-yield development such as heavy industry to outlying areas that would not normally attract growth (Steve Hinze, personal communication). With regional tax-base sharing, municipalities are also more able to

28 Since new legislation was passed in 1991 introducing criteria for participation in the program, some communities have been excluded on the grounds that industrial and commercial development was purposefully excluded from development plans.



reinvest distribution funding from the fiscal disparities program into projects that support a higher quality of life (Katz, 2002, p. 23).

The fiscal disparities program may also reduce residential sprawl because of its impact on residential location decisions. As new suburbs with high levels of business development tend to have the capacity to build high quality public services with a relatively low tax rate, older suburbs with declining commercial bases are forced to impose higher tax rates to deliver the same level of service. This disparity can lead to sprawl as people are pushed further out in search of lower property taxes and better services (New Rules Project, n.d.). The fiscal disparities program helps short-circuit this dynamic.

Assessment

Although the Minnesota approach has narrowed fiscal disparities, it has not eliminated them. Further, the program does not guarantee that jurisdictions with the highest expenditure needs (and highest poverty burden) receive funds from the regional pool. This is because only a portion of the C/I tax base growth is shared through the regional pool and because the redistribution formula does not include social indicators (Katz, 2002, p. 23). According to both local and state officials, the fact that several suburbs continue to suffer disproportionately from higher poverty rates puts the redistributive function of the fiscal disparities program into question. In order to develop the fiscal disparities program as an effective means to reach regional goals using the common resource pool, there needs to be a better understanding of how communities may benefit from the redistribution of funds through the fiscal disparities program. A number of legislative proposals have been made to study options for reforming the Fiscal Disparities Act (including a bill tabled in 2007) although each proposal has been rejected (Deb Detrick, personal communication).

Despite some resistance to the changes affecting the C/I rate in 2001, the impact of the fiscal disparities on local businesses has been seen to be relatively benign. The community planner in Eagan (a city that is a

net contributor under the program) noted that 65 percent of the businesses in his community supported the local tax regime as an appropriate level of taxation for the perceived value of services provided in the community (Jon Hohenstein, personal communication).

According to the Minneapolis Regional Chamber of Commerce President and CEO, businesses are glad to have the fiscal disparities program in Minneapolis-St. Paul because of its positive impact on the general well-being in the region. In fact, the contact in Eagan admitted that the program has had positive impacts on business development in some net receiver cities.

Due to the interest of this study in looking at the applicability of tax-base sharing as a tool promoting smart growth while financing infrastructure, our attention is directed to the role tax-base sharing plays (or could play) in developing public transit and encouraging infill development in the Metropolitan region.

Many of the interviewees recognized that transit investment was urgently required in the Twin City region. According to the Association of Metropolitan Municipalities, transit is struggling and new investment is required to support new lines and better service (Louis Jambois, personal communication).

According to an analyst at the House Research Department, there are at least two different scenarios for using the fiscal disparities program to improve transit funding directly. One is to allocate a portion of the regional pool to a specific transportation fund or agency. The other option is to follow the philosophy of distributing the pool back to local governments, while incorporating criteria for measuring transportation infrastructure needs into the distribution formula (Louis Jambois, personal communication).

Respondents at the state and municipal levels say there would be some important considerations about how this reform would take shape, including whether it would be part of the existing 40 percent contribution to the regional pool or an add-on component. Alternatively, increasing the tax collectable would likely require a

transfer in responsibilities from the state back to municipalities following an exchange in policy responsibilities that brought transit under the state's mandate in 2001. There would likely be significant resistance from the business community if the reform levied an additional tax burden on commercial and industrial properties. However, if such a reform did not change the C/I rate then the fiscal burden would be borne by other taxpayers such as homeowners.

The factors that have contributed to the success of the Twin City fiscal disparities program in integrated financing and Smart Growth goals are:

- A reduction in competition among municipalities and support for a regional approach to development, thereby weakening incentives to attract heavy industry and an increase in incentives to invest in green spaces.
- A reduction in the incentives on homeowners to disperse from older residential districts in search of lower tax rates associated with business development.

The factors that have posed challenges or that act as barriers to a more effective integration of financing and Smart Growth goals are as follows:

- The program is not configured to reduce infrastructure costs specifically or expand public transit as part of its stated objective to facilitate a regional approach to planning.
- Inadequate regional growth boundary and complimentary fiscal tools to reduce infrastructure costs and advance Smart Growth principles.

Other Jurisdictions and Transferability

The only other long-standing case of tax-base sharing in North America is in Virginia, where the City of Charlottesville and the surrounding Albemarle County signed a tax-base sharing agreement in 1971. The purpose of the measure was to eliminate competition between the two local governments for commercial and industrial tax revenue, and to reduce the costs of legal battles

over the annexation of lands where future development was expected.

The Virginia case is similar to the Minneapolis-St. Paul fiscal disparities program in that both cases redistribute tax revenue using a formula that measures population and fiscal strength. The programs differ in that the Virginia case covers the growth in all property assessment (both residential and non-residential), while Minnesota covers only the growth in the commercial and industrial tax base.

Apparently, the Charlottesville-Albemarle tax-base sharing arrangement has resulted in a reduction in legal expenses due to annexation battles, but the impact on sprawl is not clear: some critiques claim the city now has the incentive to cooperate with the county to attract economic development to outlying areas since it will benefit directly from this growth through tax-base sharing (Turnbull, 2002:24).

There are several more recent examples of tax-base sharing in the US, including the Iron Range region of Minnesota, which (like Minneapolis-St. Paul) also took advantage of state fiscal disparities legislation to create a tax-base sharing program, albeit on a much smaller scale. Municipalities in other US states are also experimenting with variations of tax-base sharing including the Meadowlands district of New Jersey and several communities in Maine.

In Canada, there is a tax-base sharing arrangement in the GTA where the regions of Durham, York, Peel and Halton, as well as the City of Toronto, each pay their share of an area-wide assessment in order to cover the municipally funded portion of social services. The province mandated this practice to reduce the disproportionate cost of service delivery on central jurisdictions where more of the expenses are incurred (Region of Peel, 2007).

The Montreal Metropolitan Community (MMC) has been using tax-base sharing to fund a small program to protect sections of the St. Lawrence riverbank through an agreement among the province, the regional government (MMC) and member municipalities (Isabelle Gauthier, personal

communication). Similar to US cases, the MMC uses a formula to determine the level of contribution from member municipalities, although there is no stipulation as to how the contribution levy is generated and no long-term budgetary commitments or legislative statutes to maintain the program. The City of Montreal has mentioned the use of regional tax-base sharing as a possible way to fund future transit development in its 2007 Transportation Plan although there have been no formal agreements made (Bernard Guay, 2007).

Resources

INTERVIEWEES

Carlson, Gary
Director of Intergovernmental Relations
League of Minnesota Cities
(651) 281-1255
gcarlson@lmc.org

Detrick, Deb
Metropolitan Council
Community Development Officer
(651) 602-1327
debra.detrack@metc.state.mn.us

Gauthier, Isabelle
Fiscal Analyst
Montreal Metropolitan Commuinity
(514) 350-2589
iguathier@cmm.qc.ca

Guay, Bernard
Director of Fiscal Policy
Ministry of Municipal and Regional Affairs
Province of Quebec
(418) 691-2035

Hinze, Steve
Legislative Analyst
Research Department
Minnesota House of Representatives
(651) 296-8956
steve.hinze@house.mn

Hohenstein, Jon
Community Development Director
City of Eagan, MN
(651) 675-5653
jhohenstein@cityofeagan.com

Jambois, Louis
Executive Director
Association of Metropolitan Municipalities
(AMM)
(651) 215-4001
louis@amm145.org

Klingel, Todd
President and CEO
Minneapolis Regional Chamber of Commerce
(612) 370-9100
tklingel@minneapolischamber.org

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WEB RESOURCES

The New Rules Project, Regional
Tax-Base Sharing
<http://www.newrules.org/environment/taxbasesharing.html>



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314, 402 West Pender Street
Vancouver, British Columbia V6B 1T6

T 604.915.5234 F 604.915.5236

www.smartgrowth.bc.ca