

# Development Guidelines to Support Sustainable Transportation

## Overview

Urban transportation and land use systems are firmly intertwined. The creation of more sustainable transportation systems will require new development projects to be more supportive. However, there are many challenges including convention, inconsistent policies and regulations, and public opposition.

Guidelines can be a valuable tool to overcome these challenges, and to help make more desirable land use a reality. This case study summarizes several notable Canadian examples of development guidelines that support sustainable transportation:

- A guide to transit-supportive land use planning
- A municipal green development standard for buildings
- Performance measures for new development
- Guidelines for transit-oriented development
- Municipal bylaws for bicycle parking and trip-end facilities
- Guidelines for site design to support sustainable transportation
- Child-friendly planning guidelines

These examples come from communities in Ontario, Alberta and British Columbia, as well as from non-governmental organizations with an interest in sustainable transportation.

## Resources

- See references provided throughout the document

## Related case studies in this series

- *Southeast False Creek Transportation Study: Sustainable Transportation for a Sustainable Community*
- *Village de la Gare: Transit Oriented Residential Development*

## Introduction

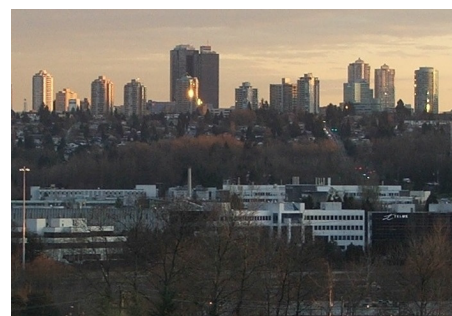
### Land use and sustainable transportation

The pursuit of sustainable transportation cannot be separated from the need for more supportive forms of development. The nature of urban land use—that is, its form, structure and design—can have a strong influence on both transportation demand and supply.

The arrangement of land uses in an urban area helps determine the amount of travel that occurs—both the number of trips (whether for work, school or personal purposes) and their length. By bringing origins and destinations closer together, supportive land use planning helps to shorten individual trips and lets travellers “chain” their trips to accomplish several things at once.

Land use also influences individual modal decisions—whether travelers choose their car, public transit, cycling or walking. The design of individual sites, proximity and density of adjacent land uses, features of various streetscapes, quality of linkages to transportation facilities, and quantity and arrangement of parking facilities all determine the attractiveness of various travel modes.

Development is a key determinant of the potential to provide effective and efficient public transit service. Quality transit service is very expensive to deliver in low-density communities, and is less likely to pay for itself through rider fares. Direct and well-connected road networks enable efficient transit routes, and fine-grained pedestrian networks help riders get to and from their destination with a minimum of time and effort.



## Current challenges

Knowing which land uses support sustainable transportation is only part of the solution, and is usually easier than translating that knowledge into reality. There are several factors that keep Canadian urban areas from successfully becoming models of progressive development.

One challenge is, simply, convention. The financing and marketing practices of the development industry have developed over decades, and it will likely take time to shift the attitudes and expectations of banks, homebuilders and consumers.

Of course, development is a highly regulated activity and provinces and municipalities have the authority to impose change. Doing so effectively, however, requires consistency among provincial laws, city-wide and neighbourhood development plans, zoning bylaws, development approval processes, and the decisions of elected officials. Given the variety of perspectives and interests among the agencies and individuals involved, such consistent change is very difficult to obtain.

Public input can pose another challenge, particularly for development initiatives that challenge the status quo of established areas (such as densification tactics like infill housing and up-zoning). While some development proposals that support sustainable transportation will be approved, others might be diluted or even abandoned because of public concerns. The time and expense required to deal with community groups and adjacent landowners can dissuade many builders from “breaking the mold” when it comes to redevelopment opportunities.

### Guidelines: A mechanism to support innovation

In general, it is difficult to predict the success of conceptual development projects that take a progressive approach. Key stakeholders are frequently risk-averse, which increases the odds that convention will prevail in any given situation. However, there are ways to build the willingness of stakeholders to innovate. Actions that can broaden their perspectives and mitigate their lack of confidence include the provision of guidance, validation and better decision-making tools.

Development guidelines are a particularly valuable tool in this regard. They can clearly articulate the benefits of progressive development, reflect valuable lessons from real-world experience, identify potential issues and suggest tools to address them effectively.

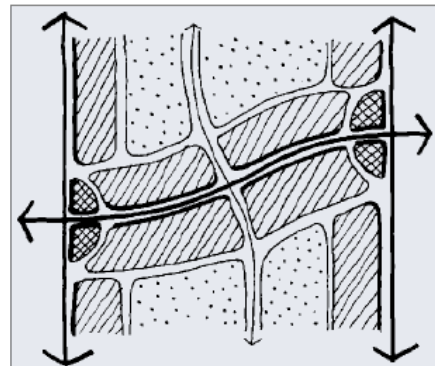
Development guidelines that support sustainable transportation have been developed by provincial and municipal governments, and by non-governmental organizations that approach the issue from a variety of perspectives. This case study summarizes several notable examples:

- The Province of Ontario’s guide to transit-supportive land use planning
- The City of Toronto’s green development standard
- The Town of Markham’s performance measures for new development
- The City of Calgary’s guidelines for transit-oriented development
- Municipal bylaws for bicycle parking and trip-end facilities in Vancouver
- Guidelines for site design by the Canadian Institute of Transportation Engineers
- Child-friendly planning guidelines by the Centre for Sustainable Transportation

## Ontario’s transit-supportive land use planning guidelines

In *Transit-Supportive Land Use Planning Guidelines* (1992) the Province of Ontario set out to show how urban development and redevelopment can be made more accessible by public transit. The guidelines resulted from an international review of transit-friendly land use planning and urban design practices, and from consultation with a variety of transit and land use stakeholders including urban planners, transit providers, municipalities, developers, builders and environmentalists. The document has been influential over the 15 years since its publication.

The guidelines identify development patterns that can make quality service more attractive and efficient, and can be applied to new developments as well as redevelopment projects in built-up areas. They represent suggestions to be used at the discretion of municipalities, rather than formal statements of provincial policy.



Province of Ontario

The document's three main chapters address:

- Land use practices, patterns and policies
- Design features of roads, pedestrian facilities and buildings
- Land use processes and incentives

Within these major topics, recurring themes include:

- Land use structure, density, mix, location and timing
- Pedestrian facility accessibility, safety, maintenance and aesthetics
- Road layout, design and special features to give priority to transit vehicles
- Incentives for modal shift including parking and pricing policies
- Planning process improvements, including considerations related to Official and Secondary Plans, zoning by-laws, and site or subdivision plan reviews

The document identifies the applicability of each guideline to different community sizes, and to different planning scales (regional, local, neighbourhood or site).

For more information:

- [www.mah.gov.on.ca/userfiles/HTML/nts\\_1\\_3173\\_1.html](http://www.mah.gov.on.ca/userfiles/HTML/nts_1_3173_1.html)

## Toronto creates a standard for green development

In January 2007, the City of Toronto set new minimum thresholds for the environmental performance of site and building designs through the publication of *The Toronto Green Development Standard*.

The standard recognizes the role of individual buildings and sites in improving environmental quality through their influence on air quality and climate change, energy use, economic and social health, ecosystems, water quality and the production of solid waste. It integrates Toronto's existing guidelines and targets with standards from private rating systems such as Leadership in Energy and Environmental Design (LEED). It also integrates the findings of an international review of green development initiatives in 100 cities and regions on five continents (*Green Development Standard Phase 1*, 2006).

The Green Development Standard addresses two categories of development:

- Low-rise residential development
- Mid- to high-rise residences, as well as industrial and institutional development

Within each category, charts identify key development features. A new standard is identified for each feature, as well as any existing guidelines or standards, similar standards used by other rating systems, and possible implementation strategies. Transportation-related development features that are addressed include:

- Automobile infrastructure—minimum parking space provision, shared parking strategies, and preferential parking for carpools and ultra-low emission vehicles
- Cycling infrastructure—short-term bicycle parking, long-term bicycle storage, and shower and change facilities
- Pedestrian infrastructure—sun and weather protection, integration with walking routes, grading and surface treatment, signage, lighting, and separation from vehicular routes and air intake or exhaust systems
- Transit accessibility—integration of transit facilities, proximity to transit service

The city has created checklists to evaluate development applications against the Green Development Standard. It intends to apply the standard to internal operations wherever feasible in the short term, and to eventually apply it on a consistent basis. Additional work is being undertaken to consult with public and stakeholders, to analyze costs and benefits of applying the standard to different building types, and to assess the legislative potential to apply the standard to private developments.

For more information:

- [www.toronto.ca/environment/greendevlopment.htm](http://www.toronto.ca/environment/greendevlopment.htm)



City of Toronto

## Markham sets performance measures for new development

The Town of Markham, lying in York Region on the City of Toronto's northern boundary, is leading the creation of a new town centre on vacant lands. The public vision for Markham Centre is a reflection of "new urbanism" with residential, retail and employment land uses mixed together in a manner that supports transit and walking.

To guide new developments and ensure support for the town centre's overall vision, Markham has established a Performance Measures Document (PMD). The PMD was formally adopted as part of the town's Official Plan in 2003 and provides a checklist against which developers, municipal staff and community members can measure the suitability of development proposals. In creating the PMD, Markham's intentions were to challenge developers to provide new and better solutions, and to monitor progress toward key sustainability goals.

The PMD's key themes are transportation, built form, open spaces, green infrastructure and greenlands. For each theme there is a "scorecard" with several sections—for example, the transportation scorecard includes sections on roads, transit, cycling, walking and transportation demand management (TDM). Each section provides a checklist of supportive features, and a small number of key performance indicators to be rated as gold, silver or bronze for the development proposal being evaluated.

Municipal staff use the checklists to provide an initial assessment of each development application, and then apply the performance indicators. A citizen advisory group reviews the application and receives a presentation from the developer, who is asked to modify the proposal in response to feedback. After the revised application is reviewed once more by the advisory group, a public meeting is held and a staff report is brought to a committee of elected officials for approval.

The PMD for Markham Centre is intended to be a living document that can be modified over time to integrate new technologies and practices, and to reflect shifting community priorities or objectives.



Town of Markham

For more information:

- [www.markham.ca/markham/channels/markhamcentre/AboutMarkham\\_Site/perform.asp](http://www.markham.ca/markham/channels/markhamcentre/AboutMarkham_Site/perform.asp)

## Calgary guides transit-oriented development

Transit-oriented development (TOD) includes mixed land uses set in a pedestrian-friendly environment within walking distance of high-quality transit service.

After high-level planning policies failed to generate TOD around key light rail stations, the City of Calgary set out to develop guidelines for the kind of development it wanted. In early 2004, the City's *Transit Oriented Development – Best Practices Handbook* examined best practices in TOD from across North America and suggested 11 key implementation tools like eliminating procedural roadblocks, creating community support, developing customized station area plans, leveraging public lands around stations, and providing financing and incentives.

Late in 2004, the City approved its *Transit Oriented Development Policy Guidelines* which are intended to shape development near current or future rapid transit stations. Six planning objectives are to be achieved by development projects in designated areas:

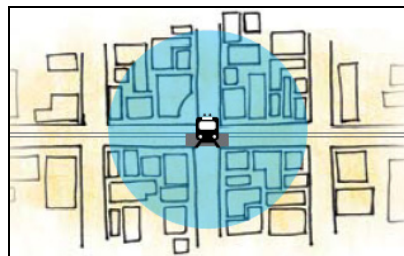
- Ensure transit-supportive land uses
- Increase density
- Create pedestrian-oriented design
- Make each station area a "place"
- Manage parking, bus and vehicular traffic
- Plan in context with local communities

For each of these planning objectives, a handful of design guidelines identify TOD options around different station types. The objectives and guidelines are intended to help developers, staff and residents improve planning processes and applications—from area plans to subdivision applications and individual development permits.

Since being approved, the guidelines have informed the development of specific TOD proposals. They have also helped educate elected officials and developers about the City's expectations for TOD, notably for large suburban "greenfield" projects.

For more information:

- [www.calgary.ca/TODplanning](http://www.calgary.ca/TODplanning)



City of Calgary



## Vancouver's requirements for cycling trip-end facilities

The City of Vancouver's land use bylaws require certain types of new developments to include bicycle parking facilities, as well as shower and change facilities for cyclists. Bylaws shape development more effectively than guidelines because they are legal documents and receive a high degree of compliance.

Vancouver's Parking By-law No. 6059, Section 6 specifies requirements for short-term (i.e. visitor) and long-term (i.e. tenant) bicycle parking spaces for:

- Residential units including seniors' housing
- Health, educational and religious institutions
- Cultural, recreational and sports facilities
- Commercial developments (e.g. office, service, retail, industrial)

The bylaw also identifies the location, size, security and access characteristics of bicycle parking spaces. Long-term spaces generally must be in a separate room or chain-link compound, or in individual lockers. For non-residential uses, long-term bicycle parking spaces must be accompanied by a minimum number of clothing lockers for both men and women.

Vancouver's By-law No. 6134 (Building By-law) requires non-residential developments that must include long-term bicycle parking spaces to also provide a minimum number of toilets, sinks, showers and grooming stations with counters, mirrors and electrical outlets.

For more information:

- [www.city.vancouver.bc.ca/engsvcs/parking/admin/developers.htm](http://www.city.vancouver.bc.ca/engsvcs/parking/admin/developers.htm)



BC Housing

## Supporting sustainable transportation through site design

In 2004, the Canadian Institute of Transportation Engineers (CITE) published *Promoting Sustainable Transportation Through Site Design*. Based on an international review of best practices and an understanding of the Canadian context, the guide recommends site design practices and supporting initiatives to enhance sustainable travel modes like walking, cycling, transit and carpooling.

Professionals can use the report to prepare more sustainable site designs for non-residential land uses (e.g. office, retail, recreational, industrial and institutional), although it could also be applied to mixed-use and higher-density residential sites. Public sector agencies could integrate its contents into local land use or transportation plans, zoning bylaws, and development guidelines or standards.

The guide's objectives and recommended practices are consistent with the goals of smart growth, brownfields development and context-sensitive street design. Several of its topics (e.g. building placement and internal transportation network configuration) apply primarily to new developments, while other topics (e.g. wayfinding signage, bicycle parking, landscaping) could apply equally to smaller redevelopment or retrofit projects.

The guidelines themselves are organized into four themes:

- Site organization—proximity of and connections between buildings and key features like parking areas
- Site layout—location and configuration of internal roads, parking areas, and facilities for transit and cycling
- Site infrastructure—dimensions, materials and signage for roads, sidewalks, pathways and parking areas
- Site amenities—bicycle parking, changing facilities, transit waiting areas, landscaping

The project was funded by CITE with support from the international Institute of Transportation Engineers and Transport Canada's Moving on Sustainable Transportation program. It involved extensive consultation with CITE members and representatives of the urban planning, urban design, transportation planning, traffic engineering, public transit, active transportation, transportation demand management and development communities.

Despite its focus on the Canadian context, the guide was published as a proposed international ITE Recommended Practice. It also won the Transportation Association of Canada's 2004 Sustainable Urban Transportation Award, and has been referenced extensively by *The Toronto Green Development Standard* (discussed earlier in this paper).

For more information:

- [www.cite7.org/Technical\\_Projects/sitedesignreview.htm](http://www.cite7.org/Technical_Projects/sitedesignreview.htm)

## Guidelines for child- and youth-friendly planning

In April 2005 the Centre for Sustainable Transportation (CST) published its *Child- and Youth-Friendly Land-Use and Transport Planning Guidelines*. The need for the guidelines was stated forcefully by developers, land use planners and public health officials during earlier phases of the CST's "Kids on the Move" project. That initiative has raised the profile of health, safety and equity issues related to transportation for young people.

The guidelines document is in three parts: the first explains why child- and youth-friendly planning for land use and transportation is important; the second sets out 27 guidelines that could be applied by municipal and other agencies to make their plans more child- and youth-friendly; and the third discusses implementation issues.

The guidelines themselves are grouped into several key themes:

- Putting children and youth first
- Providing for children and youth as pedestrians
- Providing for children and youth as cyclists
- Providing for children and youth as transit users
- Concerning school buses
- Concerning children and youth in automobiles
- Reducing transport's adverse impacts on children and youth

The guide identifies several barriers to improving the state of transportation for young people, and discusses means of overcoming them. It also notes the importance of including young people in transportation and land use decision making, and suggests some ways to do so.

With support from the Ontario Trillium Foundation, the CST is now working with Green Communities Canada on a two-year project to support implementation of the guidelines in Ontario.

In the project's first year, workshops were offered in seven municipalities and information was disseminated across the province. At least one municipality seems likely to pass a formal resolution endorsing the guidelines.



*Centre for Sustainable Transportation*

*For more information:*

- <http://cst.uwinnipeg.ca/completed.html>

## Conclusion

From bicycle parking requirements to broad performance measurement frameworks, there are numerous ways in which planners and developers can contribute to the creation of attractive, efficient transportation alternatives for the occupants and visitors of many different land uses. The examples profiled in this case study illustrate just some of the ways that guidelines can help practitioners create land uses that are more supportive of sustainable transportation.

Designers of large developments have many decisions to make, and could take many different approaches for each. The fast pace of the development industry sometimes requires them to make decisions that are not optimal, based on inadequate information. Guidelines can fill this void without the burden of legislative or regulatory changes, and in a manner that preserves flexibility for diverse or evolving circumstances.