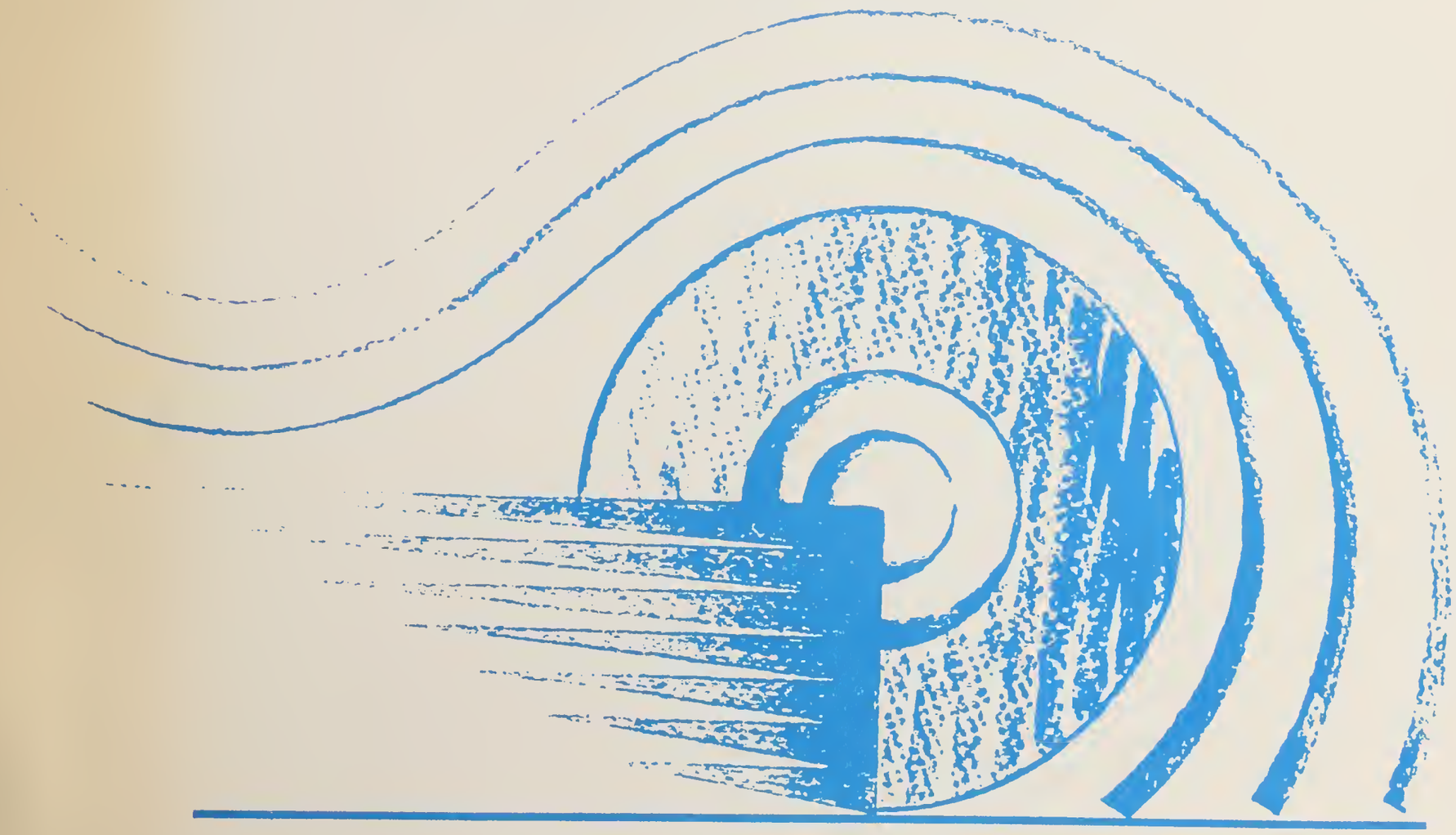
U.S. Department of Transportation

A Guide to Land Use and Public Transportation

December 1989



A Guide to Land Use and Public Transportation for Snohomish County, Washington

Prepared By
The Snohomish County Transportation Authority

December, 1989

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December 21, 1989

Dear Interested Community Member:

Snohomish County Transportation Authority (SNO-TRAN) is pleased to present its new publication entitled "A Guide to Land Use and Public Transportation for Snohomish County."

This guide is an introduction to the new topic of public transportation-compatible land uses. It gives insights to exploring new approaches to resolving old transportation problems. "A Guide to Land Use and Public Transportation" is the product of a year-long process undertaken by SNO-TRAN with the assistance of the county's transit operators, plus public and private interests.

SNO-TRAN is dedicated to helping Snohomish County communities create an environment that enhances the mobility of its citizens. Making a range of transportation options work has to be a goal for all of us if our communities are to continue to be livable and prosperous.

This guide is one of a series of efforts SNO-TRAN is taking to foster transportation alternatives through the creation of a public transportation-compatible environment. If you are interested in participating or have questions, please call SNO-TRAN at 672-0674.

Sincerely,

Bill Brubaker, Chairman
Snohomish County Councilmember

M.J. Hrdlicka, Vice Chairman
Mayor, City of Lynnwood

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Table of Contents

Introduction

This guide offers suggestions that local jurisdictions, developers, community groups, and land owners working with their local transit operators can use to locate and design activities and facilities and change trip-making behaviors so that options to autos can become realistic.

People are bewildered by the congestion that is inundating their communities, too many people are using too many automobiles. Air quality and, indeed, our quality of life are being threatened by the endless stream of autos. Creating alternatives to the single-occupant auto means creating an environment that permits people to easily use other types of transportation — buses, rail, ridesharing, ferries, walking, and bicycles. Right now those choices are not available in many areas.

One of the results of our use of the automobile has been land use patterns that can only be served by the auto. Low density suburbs and strip commercial developments were not designed to accommodate public transportation services that require large numbers of riders to make them work efficiently. Retrofitting traditional bus services into these areas is difficult, under the best circumstances, and may not be very effective. To compound the problem, such areas usually lack basic facilities such as arterials that buses can use and sidewalks that bring passengers to bus stops.

Making alternatives to the single-occupant auto a reality means creating new travel patterns based on land uses, road networks, pedestrian facilities and even employment practices that are **public transportation compatible**. This guide offers suggestions that local jurisdictions, developers, community groups, and land owners working with their local transit operators can use to locate and design activities and facilities and change trip-making behaviors so that options to autos can become realistic.

The term "public transportation" applies to a wide variety of transportation services available to the public including bus service, rail, express bus, passenger and auto ferries, and rideshare services such as carpools and vanpools.

Source: A Directory of Urban Public Transportation Service, UMTA (August, 1988)

The Community Can Benefit From Public Transportation

The community can derive both direct and indirect benefits from integrating a variety of public transportation services into its structure.

Residents can benefit from:

- Increased mobility for elderly and disabled people
- Improved mobility for many who are auto dependent
- Increased economic opportunities
- Environmental benefits
- Better community image
- Reduced congestion
- Less land in parking
- Better transit service

The development and business communities can benefit from:

- Reduced employee late arrivals
- Reduced employee stress
- Alternative commute options for bad weather
- Potentially lower traffic mitigation costs
- Reduced parking requirements
- Improved community image

Local government can benefit from:

- Reduced requirements for new roads
- Relieving congestion faster than building roads
- Partnerships with public transportation agencies and the private sector to share costs and create visible solutions
- Added capacity to respond flexibly to change
- Community awareness that action is being taken

Publicly provided transportation is a valuable but limited resource. For a community to benefit fully from this scarce public resource, the location, design and patterns of use of its residential, commercial and industrial areas and particularly its streets and public facilities need to support public transportation. The measures of the success of these land use changes will be greater public transportation ridership and increased numbers of people who know they have real alternatives to the single-occupant auto.

Residents benefit from public transportation.
Source: Metro Year 2000 Public Transportation Plan, (May, 1989)

A Community Needs to Plan for Public Transportation

> *The issue is not to change the land uses that make up a community, but rather influence their mixture and design.*

We are realizing that we must integrate the planning and development of our land and our transportation network. Planning for public transportation does not imply a radical departure from current development practices. The issue is not to change the land uses that make up a community, but rather to influence their mixture and design. Locating apartment houses on major streets with bus routes and installing sidewalks to bus stops are examples of planning for public transportation.

Public transportation can be integrated into a community in many ways. The **coordination** between community planning and public transportation needs to start when the community first writes or amends its community plan. That coordination needs to continue as the plan is revised, updated and implemented through project reviews, capital improvement program development, and the creation of new community programs.

A community can influence the public transportation compatibility of a plan by considering public transportation as it addresses each of these development issues:

- Pedestrian access
- The amount, cost, and location of parking
- The location of townhouses and apartments
- The location and design of shopping & employment
- The location of transit facilities
- The location of community facilities, schools, parks, etc.
- The mix of land uses
- The design of building complexes and their surroundings
- The design of residential developments
- The design of streets and intersections

These issues are the topics of this guide to land use and public transportation.

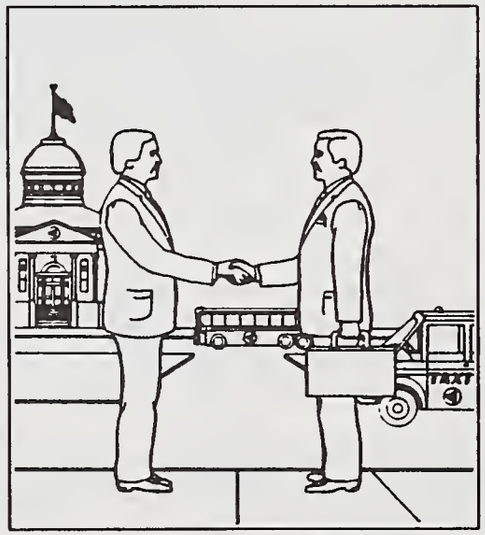
Into Action

In order to achieve the integration of public transportation into a community, both the community and transportation agencies need to consider taking the following actions.

The Local Jurisdiction Responsibilities

1. *Form partnerships with the local transportation agencies to better understand the issues.*

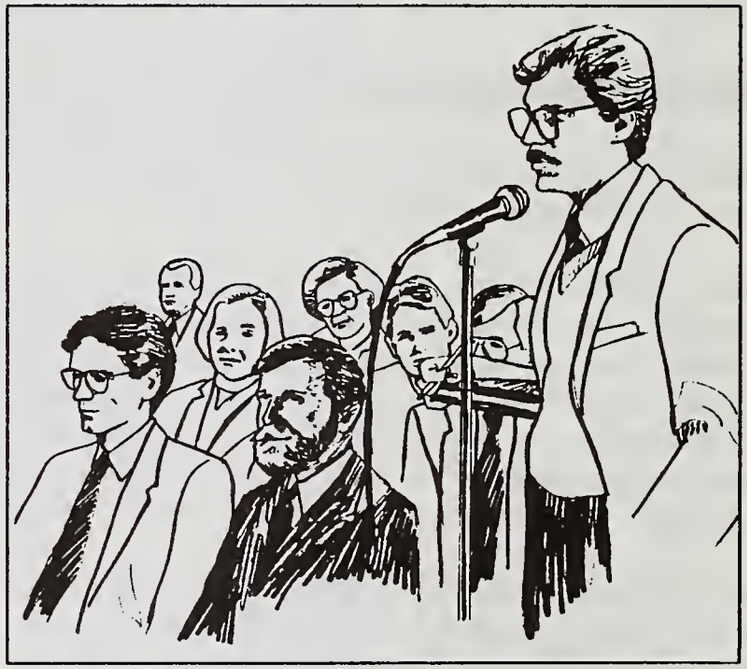
Community and neighborhood plans, capital facilities programming, street and sidewalk design and improvements all need to incorporate public transportation. For example, a consistent network of sidewalks, crosswalks, and bus shelters is crucial for bus rider safety and should be part of all plans in areas to be served by buses. Similar pedestrian facilities will be needed at ferry terminals, transit centers and future rail stations.



Partnership with public transit

2. *Include public transportation issues when formulating development regulations.*

Community plans need to be translated into usable regulations in zoning, subdivision, site design, environmental and parking requirements. For example, placing commercial buildings along streets with bus routes helps promote ridership and can be achieved by requiring the placement of parking at the sides or backs of buildings and by requiring direct pedestrian connections to sidewalks leading to bus stops.



Community participation is necessary.

Into Action, continued

There is growing interest in "transportation management" strategies. These include tools that can either increase the people-carrying capacity of the existing transportation system, including roads, or reduce the amount of single-occupant auto traffic. For example, ordinances use incentives to encourage rideshare or transit fare subsidy programs and disincentives to discourage huge parking lots or roads that cannot carry buses.

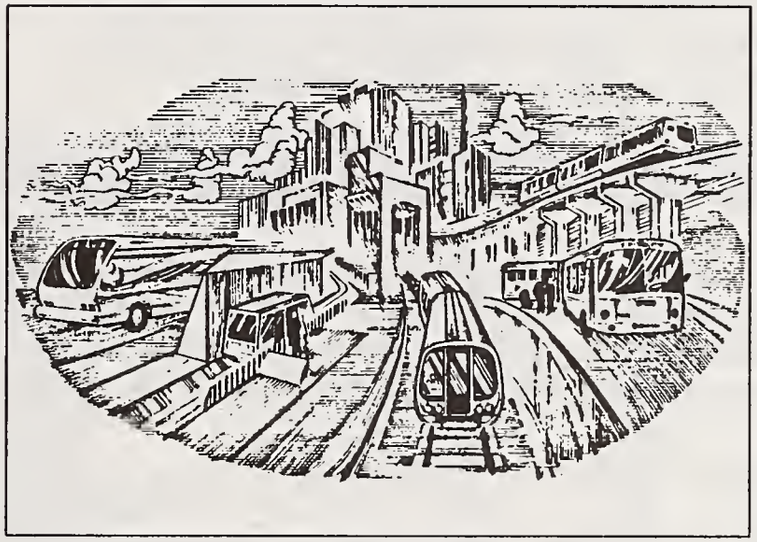
3. ***Assure compliance of development proposals with public transportation guidelines within environmental (SEPA) and other development regulations.***

Once the transit-compatible policies and regulations have been adopted, all these regulations must be applied consistently to public and private development projects including road improvements.

The Transportation Agency Responsibilities

If a public transportation-compatible community is to be created, local transit agencies must participate in many aspects of the community where they have traditionally not been involved. The local transit agency must:

- Educate the community about the benefits and needs of a public transportation system;
- Work with public agencies and private developers to develop compatible design criteria and regulations;
- Work with public agencies and developers to help plan and design compatible developments;
- Work with other public transportation agencies such as the State Ferries and the State Department of Transportation to assure transit compatibility at ferry terminals and on state highways;
- Work with the cities and the County to assure construction of transit-compatible roadway improvements such as arterial HOV lanes and bus pullouts;
- Supply new markets with new transportation services, only if that service is supported by a public transportation-compatible environment.



SNO-TRAN'S Guide to Public Transportation and Land Use

To be useful, this guide must be viewed as an introduction to land use and public transportation. Most of its suggestions are new, a few may be radical, some are simple, others are complex; but these ideas are offered as starting points for communities to discuss new approaches to resolving their transportation problems.

This guide is an introduction to the emerging concept of public transportation-compatible land uses. It is written for the benefit of those designing, planning, developing, reviewing or rendering decisions on land uses or development projects.

This guide contains the following:

- The first two chapters are an introduction to the concept of public transportation-compatible land uses and the workings of public transportation.
- Chapter 3 describes the criteria that make land uses compatible with public transportation.
- Policy guidelines are discussed in the form of model community plan goals and policies in Chapter 4.
- The next four chapters, 5-8, describe specific ways to achieve compatibility through a zoning ordinance, a transportation management approach, the design of residential subdivisions and the site design for most types of developments.
- Chapter 9 contains work sheets to apply all these concepts and details to proposed developments to assist in determining whether or not those developments are compatible with public transportation.
- The two appendices include a glossary of public transportation terms (which may be used as models for ordinance definitions) and a list of the references used to write this guide (which may be considered a bibliography of public transportation compatibility).

Chapter 2: How Public Transportation Works

- An Introduction to Trip Making
- Public Transportation: Designing Service
- Public Transportation Resources: Best Use
- Transit's Favorite Stories: What Works and What Doesn't
- Service Planning Guidelines

Introduction

While public transportation includes a whole variety of transportation services including ferry and passenger rail, the focus of this chapter will be on the two most common forms of public transportation — buses and ridesharing (typically provided by carpools and vanpools).

We take public transportation for granted, but public transportation only works when conditions are right. This chapter is designed to help communities understand why bus services and ridesharing programs work under some conditions and not under others and why transit can't respond to all requests for service.

Unless one lives in larger, higher density cities where many people have traditionally relied on public transportation, it may be difficult to use public transportation, especially in suburban areas — even if a person wants to. It is especially difficult in lower density areas where the number of people "heading your way" is probably pretty small. Another name for public transportation is *mass transportation*, service for masses of people. Public transportation is very effective where it can pick up many passengers at each stop throughout the day. The perception of "empty buses" in suburban areas reflects a number of factors involving development and lifestyle choices that result in too few riders living too far apart.

The public transportation services you see on the street are the product of understanding:

- How people decide to take trips on transit or the demand for service;
- How services can best be tailored to meet that demand;
- How the right resources (vehicles, drivers, etc.) can be assigned to fit the service design; and
- How those services and resources will really work when they are put out in the community.

This chapter is structured like the public transportation planning process that is based on the understandings of demand, service design, resource allocation and running the service on the street. It is hoped that the reader's understanding of this process will help further cooperation between the community and public transportation.

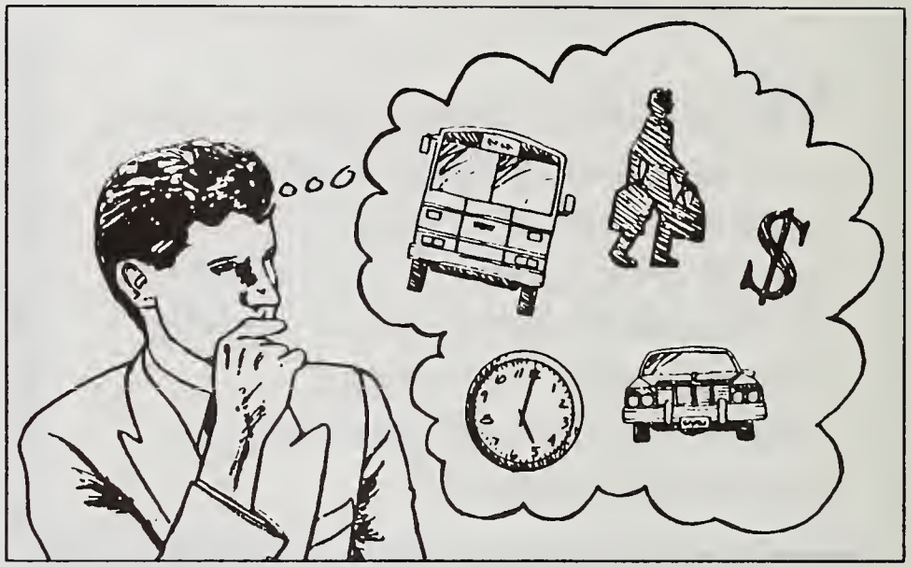
An Introduction to Trip Making

To understand the demand for public transportation services, we have to understand how trip making works.

When a person decides to take a trip, he or she consciously and unconsciously considers practical options and personal preferences. One thinks about the trip's destination and evaluates whether to walk, take the bus, drive a car, use a carpool/vanpool, etc. That choice is colored by:

- What options are available (i.e., whether to walk or take one of several vehicle choices);
- How long the trip will take, which is based on the routes the vehicle can take and how fast it will go;
- Whether the vehicle choice will get him/her to the destination on time;
- How much the trip will cost for each of the vehicle choices (cost here includes fuel costs, parking costs and fares*); and
- How many inconveniences or discomforts will be experienced — like waiting in the rain, having to walk in the dark or enduring endless traffic congestion.

* While there are other costs of driving a car (insurance, depreciation), few people think of these other costs when they decide to take a trip.



Deciding to take a trip

Trip-Making Examples

Can the Bus be the Choice?

Mike, a Snohomish County resident, considers how he wants to travel to the grocery store:

- If he walks, it will take half an hour each way and he'll have to cross that vacant lot since there is no direct sidewalk route to the store. If he walks, the store is likely to be closed by the time he gets there, but even if he can shop, he'll have to carry the bags back.
- If he takes the bus, it'll take even longer since the bus goes via the playfield. He may get there after the store closes since the bus won't come for another 20 minutes. Lugging groceries on a bus is not really appealing.

An Introduction to Trip Making, continued

- So Mike takes the car. He can drive directly to the store; the trip will take ten minutes so he'll have time to shop; and bringing groceries home in the car is easy.

➤ **What would make it possible for Mike to take the bus to the store?**

Probably nothing practical, short of there being no parking available or a very high cost to park. But in today's suburban environment, there are too many factors that favor his car.

Can the Bus or Ridesharing Be the Choice?

Sally has to decide how to get to a new job:

- Walking or riding a bike is out — the job is too far away.

- There is bus service to her job site, but the bus can't safely stop outside her subdivision because it is a busy state highway and there is no bus pull-out: She'd have to walk 200 feet on the highway to the nearest stop and there is no sidewalk. In order to be sure she gets to work on time, Sally would have to leave the house an hour before work starts to catch the bus.

- She'd like to carpool or vanpool, but her employer has established variable work schedules and she can't find anyone who lives near her who works the same hours.

Commuting on a bus to work.
Source: Metro Year 2000 Public Transportation, (May, 1989)

- She takes her car. She can drive easily to her job and the employer has provided acres of free parking. She decides the congestion she encounters is tolerable.

➤ **What would make it possible for Sally to use public transportation for her work trips?**

If the developer of her subdivision had put in a sidewalk to the bus stop and if her neighbors joined her in requesting a rescheduling of the bus service, Sally might have been able to take the bus. If her employer encouraged ridesharing by consolidating work schedules or allowing people to set their own schedules (flextime), and providing priority, close-in parking spaces for people who rideshare, Sally might be able to put together a carpool or vanpool.

Public Transportation: Designing Service

Public transportation operators are businesses, supplying transportation services. They have to design services to assure that their shareholders — the taxpayer and the transit user — see services that are as productive as possible.

Productivity means passengers. To provide productive services, public transportation operators have to balance demand for service with available resources — vehicles, drivers, operating funds — designing suitable routes and schedules to fit.

- In big cities there are usually large numbers of people (demand) wanting to go to a set of destinations (along the route) when the buses make the trip (the schedule). The cost per passenger is fairly low since it is distributed among many passengers riding the bus.

- In suburban areas where riders are fewer and live farther apart, their trip destinations and times they want to travel may be similar (workers going to a major employment center) or very diverse (shoppers going to different malls). The cost of carrying each of these riders will be much higher since each trip will probably be longer and serve fewer passengers.

- One exception is express bus service: Large numbers of suburban riders are collected at park-and-ride lots and taken directly to their destinations, quickly and cheaply. These trips do not have to wander through low density areas collecting one passenger here and another there and so are very cost-effective.

- Another exception is ridesharing which effectively tailors "mass" transportation to serve a smaller group to fill the vehicle. Carpools and vanpools can be set up by employers, the transit operator or by individuals where small clusters of travelers have similar origins and destinations for regularly scheduled trips. While a carpool or vanpool doesn't appear to make a big dent in congestion, in the aggregate, ridesharing can be a major tool in reducing peak period traffic. Ridesharing, like other forms of public transportation needs a compatible environment if it is to be truly effective.*

TSM in Washington State

Source: WSDOT Transportation System Management (TSM) in Washington State

* A compatible environment requires roadways, parking and information programs that make it possible for rideshare vehicles to compete with the private auto. Chapters 3,6,7,8, and 9 have information on this.

Public Transportation Resources: Best Use

Public transportation planners have to consider how best to use their resources to fit the services they design.

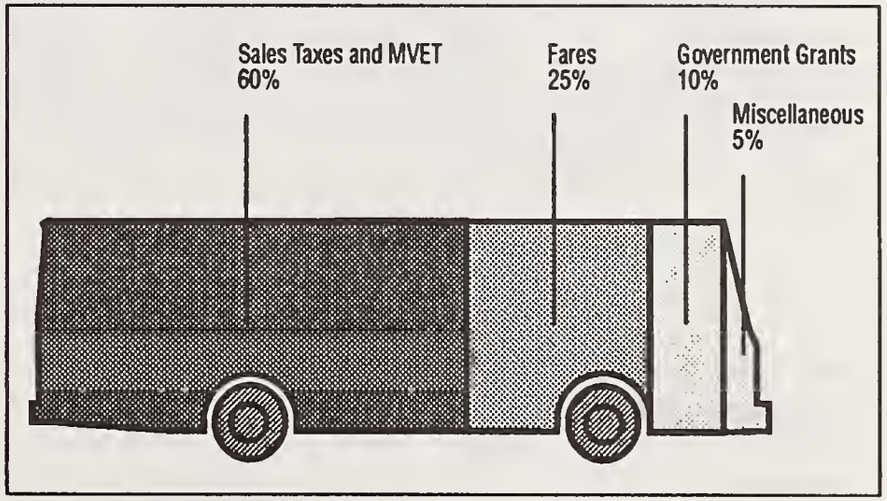
The **number of buses** a transit operator has is pretty much fixed from year to year. Ordering new coaches can take one to two years from the time specifications are developed to when the buses are delivered. In most cases, buses are specially built for each order — you can't just go pick them "off the shelf."

If buses are to be used on a new route or added to an existing route, those buses are probably going to be taken off an established route, reducing the frequency of service on that route. How will the users of that route react?

The **number of rideshare vans** available through a transit operator's rideshare program depends on how much money is available for purchasing vans and on the demand in the community for vanpools. The operator has to balance community interest in ridesharing with demands for fixed-route bus services and services for elderly, disabled and other people who require specialized services. One advantage of vanpools is that the operating costs of the vans are usually shared by the van users who pay a monthly fare that covers most, if not all, those costs.

The **number of drivers** available depends on the overall number of drivers employed, the number available on any given day (not on vacation or sick leave), the number of shifts, and the number of trips within each shift. One reason that transit agencies are turning to 60-foot articulated (bending) buses is that they can carry many more people with one driver than can be carried on a conventional 40-foot bus. Trains can carry even more people with one driver (and some trains operate without drivers!).

The **size of the operating budget** depends on the amount of funds available from taxes, fares, advertising, and government grants. A typical transit agency operating budget looks like this:



Even if transit agencies want to provide more services and facilities (like transit centers and park-and-ride lots), they face many barriers:

- Buying land and constructing new facilities means meeting a great number of state, local and federal rules and regulations including environmental regulations, planning requirements, and building codes, many of which take several years to meet.

Public Transportation Resources: Best Use, continued

Buying new vehicles can also be complicated by federal purchasing rules, new "alternative fuel" regulations, and lengthy purchasing processes. Some examples:

- There are many buses available for delivery from European manufacturers but they are off limits because of the "Buy America" rules. Because of backlogged orders, American manufactured buses may take three years to arrive.

- Buying rideshare vans on the State contract saves a great deal of money, but the State only buys vehicles twice a year, meaning long delays in getting needed vans.

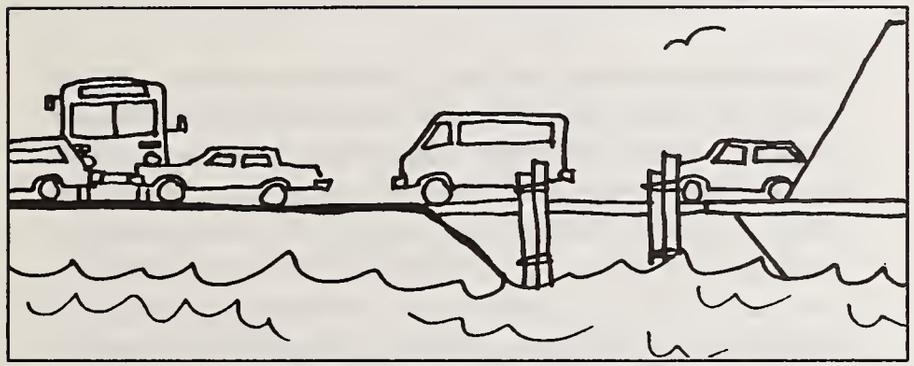
Transit's Favorite Stories: What Works and What Doesn't

There are many stories that public transportation agencies can tell about what works and what doesn't work when services are evaluated in their operating environment (the community).

The following examples are all drawn from Snohomish County.

1. Why Transit Can't Meet the Ferry

In one of the towns served by the ferry system, the buses need to make a left turn, across the lane of ferry traffic being loaded or unloaded, throwing bus schedules way off.



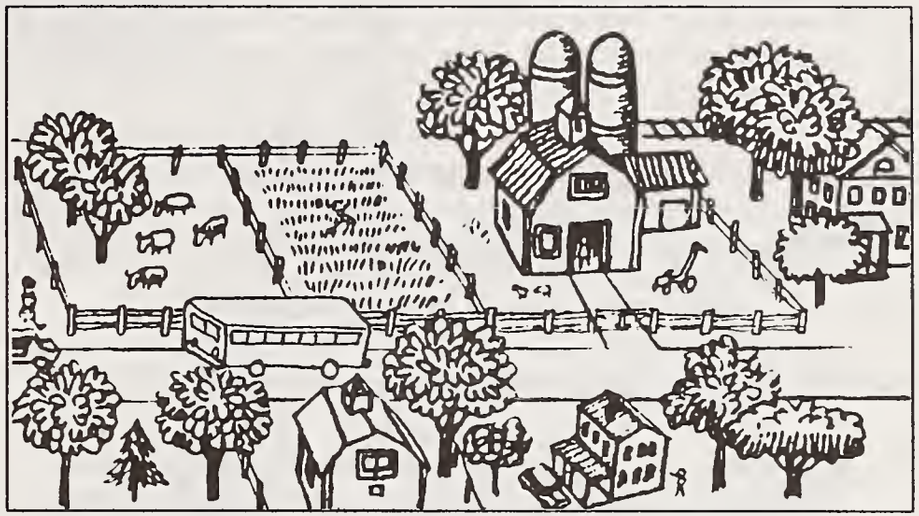
It's hard to keep on schedule

➤ **The Public Transportation Solution**

What was needed was a left-turn traffic signal activated by the bus driver so buses could make the turn and continue on schedule.

2. A Trip in the Country

In an effort to reduce traffic, several cities have decided not to build arterials through their cities. Transit buses, unable to take the logical, straight route have to wander through neighborhoods and out into farmlands, resulting in long, unproductive routes.



Buses need riders

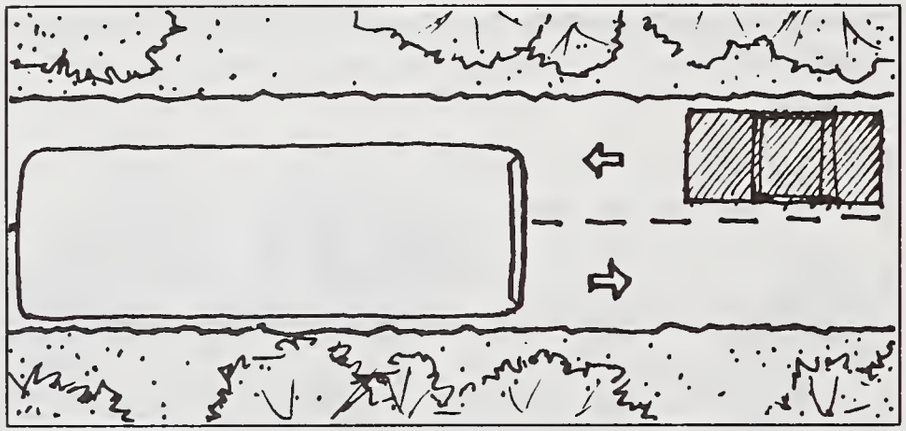
➤ **The Public Transportation Solution**

As cities lay out their street plans or make plans to annex new areas, they should work together with local developers, community groups and the transit operator to consider the transit service implications of the road design and weigh the benefits to the community of having efficient bus operations.

3. Can't Get Back From There

A major employer wants buses to serve its very large facility to help reduce traffic congestion. Unfortunately, the road into the site was not designed for large vehicles and there is no place for buses to turn around. (For safety reasons, buses don't back up.)

Transit's Favorite Stories: What Works and What Doesn't, continued



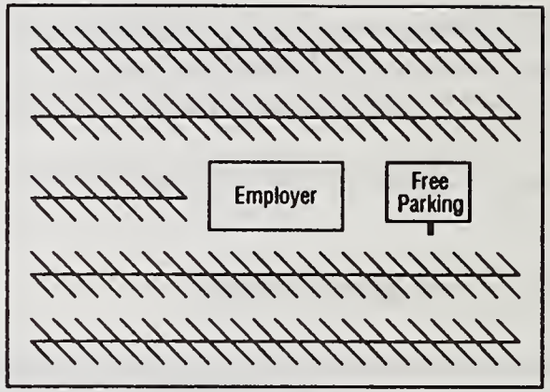
Big buses and small roads create problems!

➤ **The Public Transportation Solution**

Developers should work with transit planners early in the site planning process to assure that roads are wide enough, turning space is provided and that pavements are designed to carry buses so that when bus service is needed, the transit system can respond.

4. Foiling Ridesharing

Another major employer would be a perfect site for a major ridesharing program since many of its employees could efficiently use carpools and vanpools. The problem is that the employer offers hundreds of "free" parking places (though they cost $1,000-$3,000/space to develop), making it easy for people to drive alone. Congestion and a lot of space wasted on parking are the results.



Free parking foils ridesharing

➤ **The Public Transportation Solution**

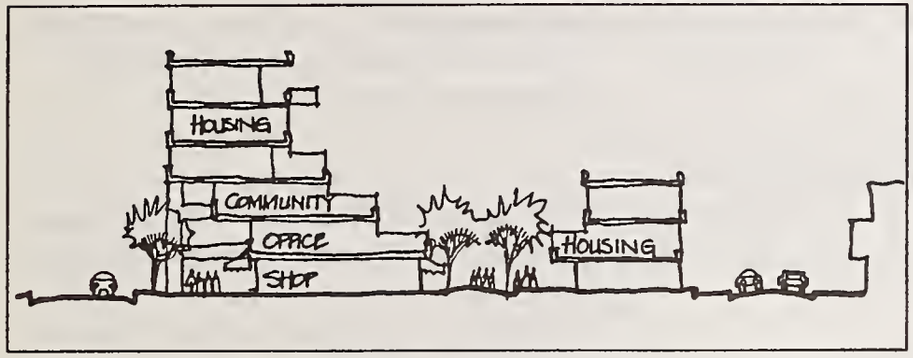
The employer has a number of options available. Single-occupant vehicles (SOVs) could be required to park in lots farthest from the buildings and preferential parking could be reserved for rideshare vehicles. SOVs could be charged for parking; carpools and vanpools could park free. The employer, working with transit, could develop incentive programs to encourage employee ridesharing. A number of company cars could be made available to ridesharing employees who need to make business-related trips during the day.

5. Multi-Purpose Trips Need Autos

At a number of residential and employment sites in the county, residents and workers are forced to use their cars for a whole range of trips people have to take during the day because no services are available on site or within a safe and easy walking distance. Because they need their cars for these kinds of trips,* these people are not candidates for public transportation.

* Recent statistics show that short trips to stores, daycare, banks, recreation areas, etc., account for a large portion of all vehicular trip making. Single use land uses are one major reason that so many people have to use their autos for these trips.

Transit's Favorite Stories: What Works and What Doesn't, continued



Mixed-Use Development
Source: Burnaby Metrotown, Burnaby Planning Department, (June, 1977)

➤ **The Public Transportation Solution**

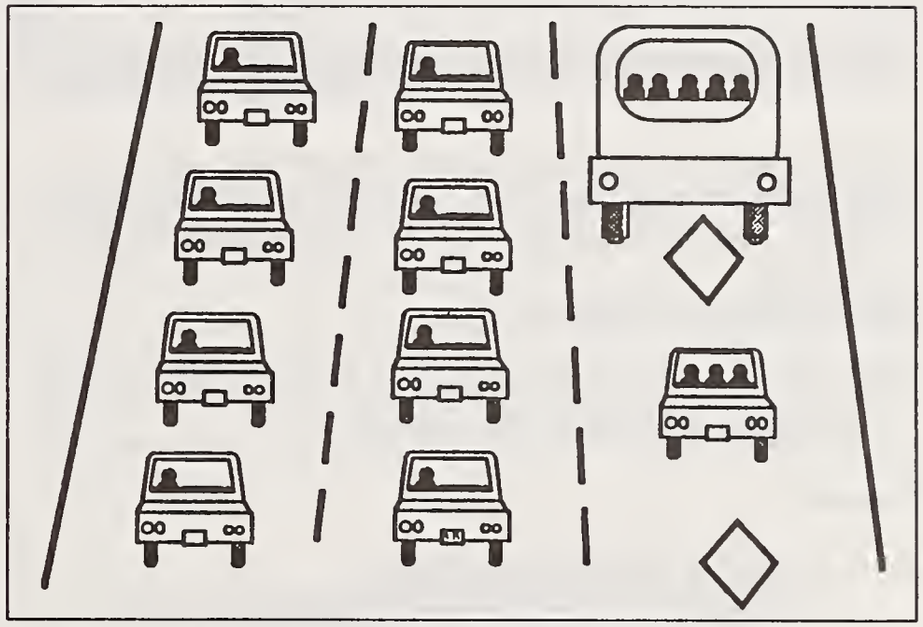
As new developments are planned, mixed-use developments should be given greater emphasis. Banks, dry cleaners, restaurants, daycare, fitness centers and the like can enhance a development by reducing the need for people to take their cars to run errands during the day or after work.

6. Give Transit a Break

People like the privacy and comfort of their private cars and getting them to use ridesharing and buses is very difficult unless those modes have a "leg up" on cars. Time savings and "leaving the driving to us" can be transit's advantage over private auto use.

➤ **The Public Transportation Solution**

The advantage express buses have can be created elsewhere if local communities and developers, working with the transit operator, consider building high occupancy vehicle (HOV) facilities (park-and-ride lots, bus turning lanes, HOV lanes) into the arterial network. A good example is Community Transit's express bus operations into Seattle which use the HOV lanes (also called diamond lanes) down I-5. Those lanes, reserved for buses and rideshare vehicles, can save minutes on a rush hour trip making those express buses very popular.



High Occupancy Vehicle (HOV) lanes give transit an advantage.
Source: Preliminary Report on High Occupancy Vehicle (HOC) Facilities and Activities, WSDOT, (January, 1989)

Service Planning Guidelines

The section that follows contains more detail on public transportation service planning. If the reader is interested in additional information on any of the points raised in this chapter, he or she is encouraged to contact the local transit operator.

What do public transportation planners consider as they plan service? One thing they look at is potential routes. The following are from Community Transit's "Guideline for Route Analysis."

Route Planning Guidelines

Goal: Provide safe, efficient, effective transportation service for the residents of a community.

Factors:

- **Accessibility to route by residents**
  Consider:
  - % of population within walking distance of a bus stop
- **Diversity of destinations served**
  Consider:
  - Number of activity centers connected
  - Transfer opportunities provided
- **Efficiency of routing/directness**
  Consider:
  - Bus travel time vs. auto travel time
  - Minimize loops*
- **Safety of route**
  Consider:
  - Street width/pavement conditions
  - Road conditions in adverse weather
  - Safety of travel lane stops
  - Pullout and shelter facilities (potential)
  - Manageability of turns
- **Responsiveness to the public**
  Consider:
  - Public input in the forms of service requests, survey responses, etc.
  - Political pressures & political feasibility

Tasks:

1. Identify multi-family and high density single family locations.
2. Locate activity centers (employment, retail, etc.)
3. Gather data on ridership trends and current route ridership.
4. Incorporate public input and solicit comments.
5. Identify the locations of other bus routes or modes of public transportation in the area to consider transfer connections where applicable.
6. Check on any road improvement projects planned for the area.
7. Drive through the area to do preliminary time checks and initial inspection of road conditions and route characteristics.

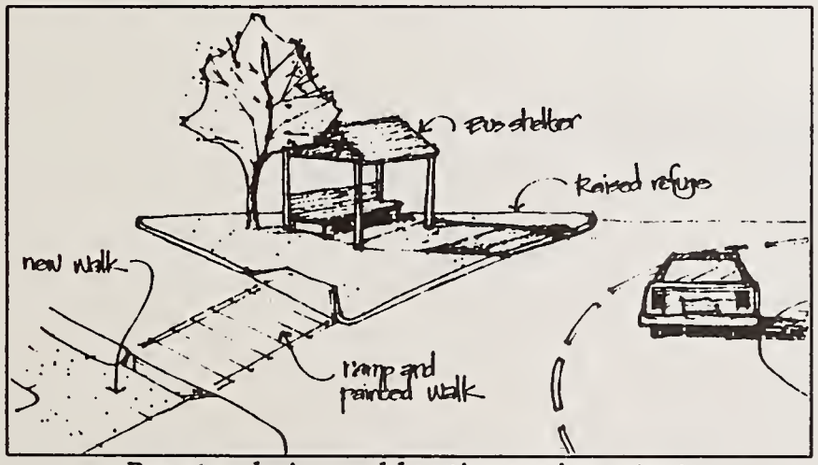
* Loops are circular routes that can take people way out of their way and are very inefficient. Direct routing is much preferred.

Service Planning Guidelines, continued

Bus Stops: How They are Designed and Sited

A bus stop is basically a *bus zone* plus the *bus stop* itself. The bus zone is usually 80 to 160 feet long — the space for the bus to pull in and out to serve the bus stop. The bus stop is the passenger loading "platform" and is generally marked by a bus stop sign and may have a shelter and other facilities such as phone booths, lighting and transit service information signs.

Ideally, bus stops are paved areas, accessible from two sides by paved sidewalks with wheelchair ramps at intersections. The bus stop area needs to be large enough to accommodate the anticipated number of passengers that will board and alight there and large enough for a wheelchair to maneuver on and off the lift on the side of the bus. (See Chapter 8 for more information on bus stop design.)



Bus stop design and location are important.
Source: Accommodating the Pedestrian, Richard Untermann, (New York, 1984)

The location of bus stops is decided by the following factors:

- Safety considerations for pedestrians and vehicles
- Passenger demand — how many people will use the stop
- Local regulations — the location of bus zones and stops has to be approved by the local jurisdiction
- Impacts on private property
- Efficiency of operations — what will this stop mean to overall operating speeds and timed transfers
- Sight distances must be such that drivers and passengers have clear views on either side of the stop (generally not less than 300 feet).

Bus stops can be located immediately before or immediately after an intersection or they can be located midblock. Each has its advantages and disadvantages and each has its own bus zone dimension requirements. The local transit operator can help evaluate potential bus stop locations and provide designers with their adopted standards.

Bus stop signs are provided by the transit operator and must be located and mounted to meet the operator's and the local jurisdiction's standards. Bus stop shelters may be provided by the operator, if passenger volumes and other considerations permit. If a non-operator provided shelter is desired for a location, its design and siting must be approved by the transit operator. The reasons for this approval requirement include safety, barrier-free design and long-term maintenance concerns.

Bus stops must be convenient.

Chapter 3: Public Transportation – Compatible Land Uses

- ❑ ***Land Use is Important to Public Transportation***
- ❑ ***What Makes Land Use Compatible With Public Transportation?***

Land Use is Important to Public Transportation

Developers and business people can derive substantial benefits by integrating public transportation into their development projects and businesses.

Public transportation works most effectively where you find high activity levels, limited parking, and quality pedestrian and transit access. Such activities or land uses can be considered "public transportation compatible."

The benefits to the community of creating public transportation-compatible environments were reviewed in the introduction (Chapter 1). Key among the benefits is increased mobility for the many types of trips community members may wish to take for shopping, jobs, school, and recreation. Effective public transportation system operations depend in large part on how the community is designed and particularly how its land uses relate to its road network.

Definitions

Developers and business people can also derive substantial benefits by integrating public transportation into their development projects and businesses. Well designed transit facilities integrated into developments can:

- Reduce parking needs and costs;
- Lower front-end construction costs;
- Mitigate traffic impacts;
- Mitigate SEPA requirements;
- Attract customer attention;
- Improve employee morale;
- Increase employee retention;
- Increase employee productivity; and
- Create a better community image.

Definitions

"Public transportation" applies to a wide variety of transportation services available to the public. To understand how land uses can support these services, we can divide the services into the following categories:

Local Transit Services	High Capacity Transit Services	Ridesharing Services
■ Local buses	■ Express buses	■ Carpools
■ Special services (for elderly & disabled & other special groups)	■ Rail transit	■ Vanpools
	■ Passenger & auto ferries	■ Buspools (Subscription bus)

What Makes Land Use Compatible With Public Transportation?

Public transportation-compatible land uses have to be defined using a variety of criteria.

Public transportation-compatible land uses have to be defined using a variety of criteria. Few of these criteria are cast in concrete because there always will be variations caused by local conditions or the type of public transportation service available. The compatibility criteria for the location and types of land uses may differ for local bus service, express bus service and rail service.

"Compatible" land uses generally meet most of the following eight criteria:

1. Land uses are located within existing urban or suburban activity centers
2. Land uses are located within mixed-use areas
3. Land uses are located near transit service
4. Land uses have an orientation towards transit services
5. Walking distances are pedestrian scale
6. Design encourages riders
7. Land uses encourage riders
8. Land uses have minimal parking

1 Land Uses Are Located Within Existing Urban or Suburban Activity Centers

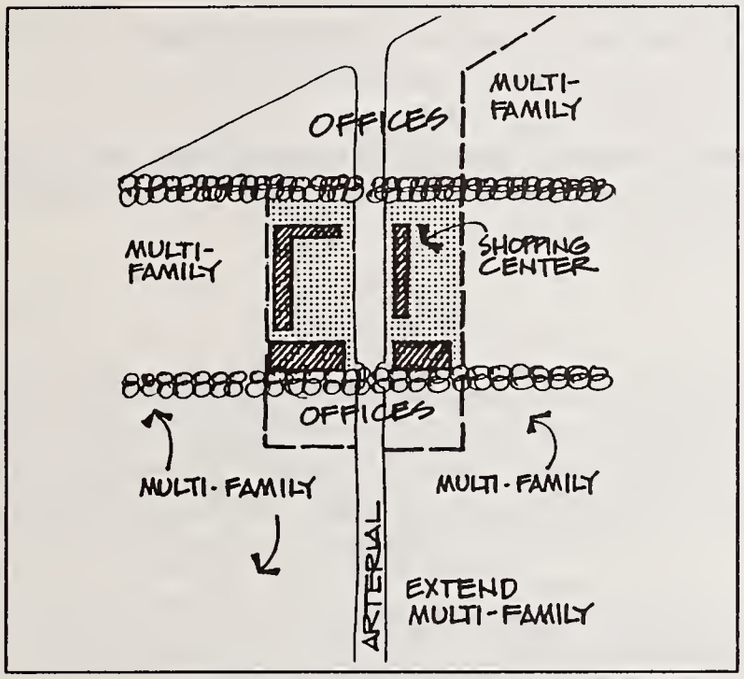
Public transportation works best when land uses are located within an existing urban area or a suburban activity center. Generally, the closer a land use is to the middle of an activity center the better. Generally, the greatest number of transit riders can be found in the middle of activity centers where land uses are concentrated and parking is expensive and scarce.

Historically, the proximity of activities to a downtown has been important. In the future, this factor may not be as important since so many activities are locating in suburban areas. What is more important is *the concentration of activities* within activity centers in suburban areas.

2 Land Uses Are Located Within Mixed-Use Areas

Bus and rail services and ridesharing work better where activities are mixed together and people can walk between activities. Example: Offices mixed with restaurants and retail stores or small shops located within residential areas. People can take care of several activities without making multiple auto trips.

Compatibility Criteria, continued



Locate in mixed use areas

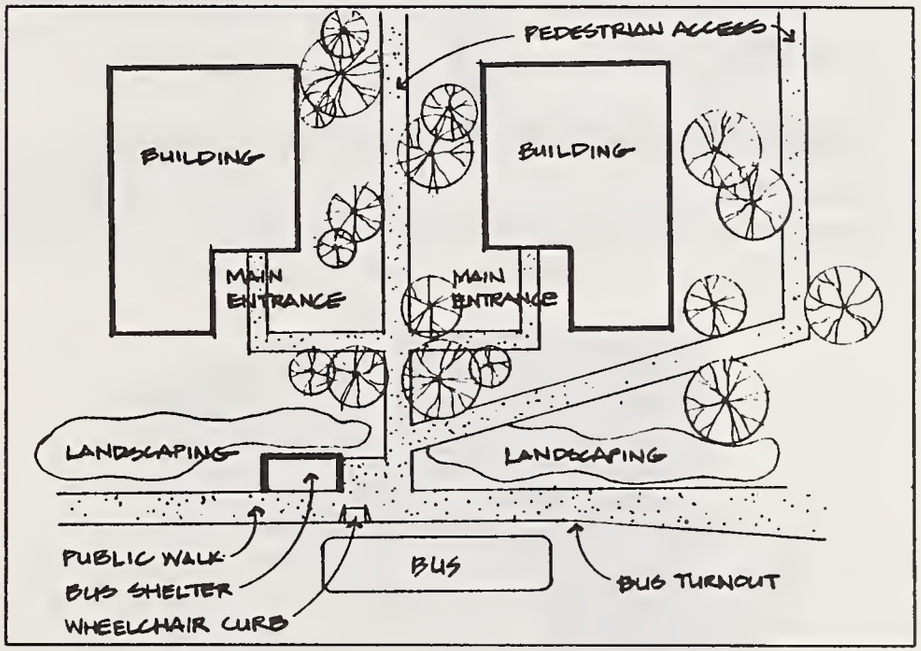
Source: Accommodating The Pedestrian, Richard Untermann, (New York, 1984)

3 Land Uses Are Located Near Public Transportation Service

Land uses must be located near a bus stop or other public transportation facility or a planned route. A site is not public transportation-compatible if service is not currently provided at, or planned for, that location, even if somebody thinks public transportation "could work there."

4 Land Uses Have An Orientation Towards Public Transportation Service

Land uses need to be oriented to public transportation facilities. People are not motivated to use public transportation services if buildings do not provide convenient, quality access — even if buildings are located close to a bus route or rail line. Building entrances and paved walkways need to lead directly to a bus stop, a park-and-ride lot, or a station.



Orient land uses to public transportation facilities.

Source: Design Guidelines for Bus and Light Rail Facilities, Regional Transit, (Sacramento, CA)

Shopping centers, for example, very seldom provide any attractive way for pedestrians to reach the building entrance from a bus stop without a lengthy walk through a parking lot or across landscaping. Bus operators are hesitant to enter these parking lots where buses can be tied up in traffic.

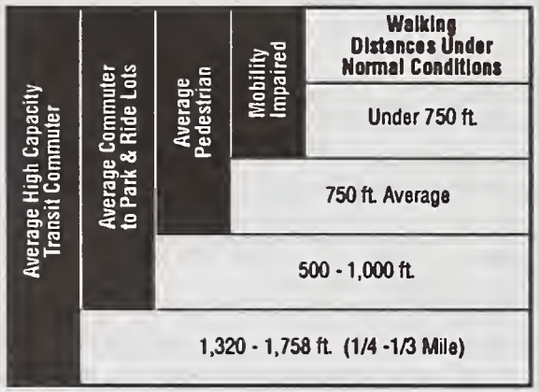
Compatibility Criteria, continued

> *People can be expected to walk no more than 1,000 feet to a bus stop or a park-and-ride parking space.*

5 Walking Distances Are Pedestrian-Scale

The closer both the beginning and end of a trip are to a bus stop, the greater the likelihood of people using public transportation. For example, isolated activities, even high-density activities, do not generate riders if public transportation is difficult to reach.

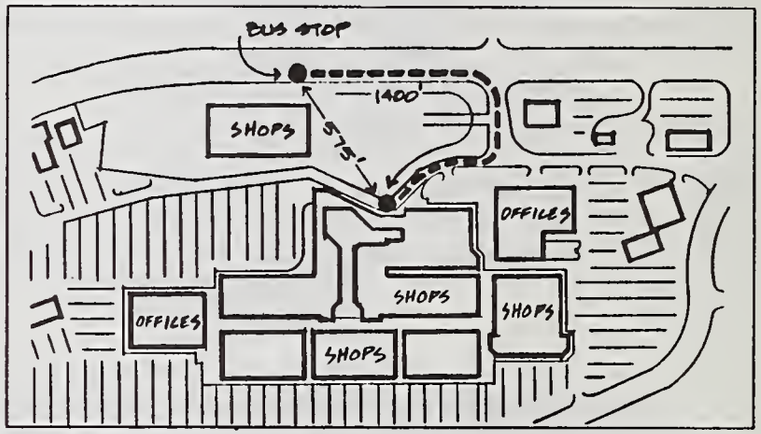
People can be expected to walk no more than 1,000 feet to a bus stop or a park-and-ride parking space. The walking distance increases slightly, to 1,320-1,758 feet (1/4 to 1/3 of a mile), for rail station access.



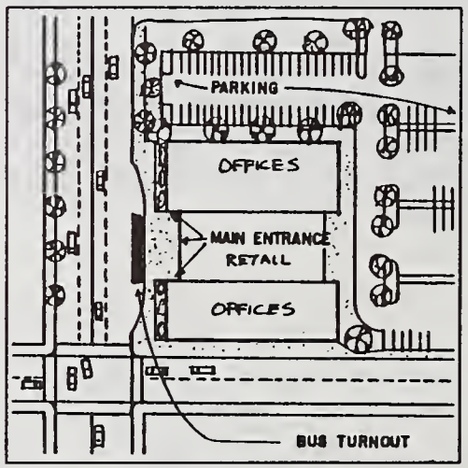
Pedestrian walking distances

The quality of the walk is as important as actual distance. The distances people will walk are reduced dramatically by steep grades, a lack of weather protection, and a lack of paved, hazard-free surfaces. These factors become crucial for people with disabling conditions that affect mobility. On the other hand, walking increases as the environment improves.

Distances are not measured in a straight line, but by the actual walking distance, given circuitous roadways, missing sidewalks, and other obstacles.



Measure actual walking distances.



Source: Design Guidelines for Bus and Light Rail Facilities, Regional Transit, (Sacramento, CA)

6 Design Encourages Bus Access

Bus service can work most effectively where bus facilities, such as bus stops or transfer centers, are designed into buildings, residential developments, roads, and building entrances.

Compatibility Criteria, continued

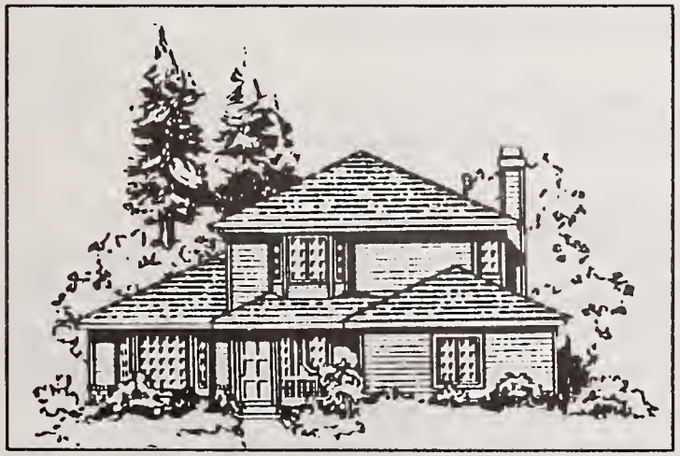
7 Land Uses Encourage Riders

Three types of land uses — residential, non-residential, and employment — will be discussed for their ability to generate transit riders.

Residential

Ridership on public transportation increases as residential density increases. Under good conditions, at 15 dwelling units per net acre (du/ac), there can be a 100% increase in bus usage over that of 5 du/ac; at 30 du/ac, bus usage can triple; at 50 du/ac there can be more bus trips than auto trips.

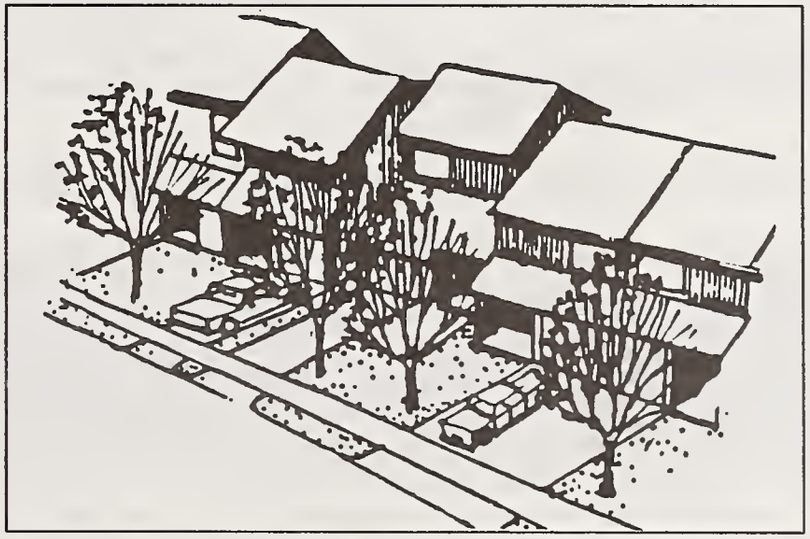
Low density residential areas cannot sustain traditional bus services. However, these areas may be served by other types of public transportation such as dial-a-bus, park-and-ride facilities, van/carpools and similar new public transportation services.



Low density single-family housing of under four dwelling units per acre - a residential density too low generally to support any transit except park-and-ride express buses to very large downtowns.

The threshold for local bus service to residential areas is approximately four to seven dwelling units per acre. In certain suburban locations, at or above 8 du/ac, bus service may be improved to one-half hour from one-hour headways if conditions permit.

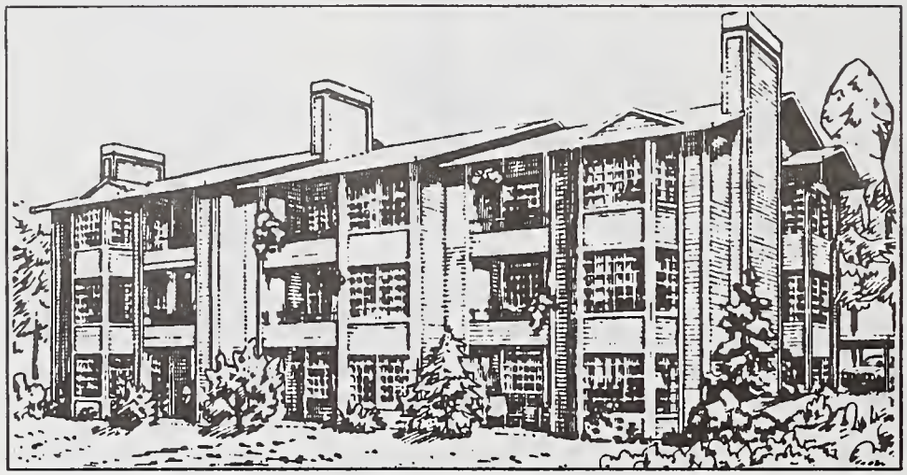
Small-lot single family housing of seven dwelling units per acre can generally support local bus service.



Medium density residential between seven to fifteen dwelling units per acre can generally support local bus service. If these densities are maintained over a large enough area, with good access, rail transit may be supported.

Compatibility Criteria, continued

The threshold for high capacity transit such as express bus and rail services is approximately 24 dwelling units per acre under certain conditions such as size of the downtown and the distance to that downtown.



Multifamily residential of twenty to twenty-five dwelling units per acre is the threshold to support high capacity transit if location and access are good.

High-density residential can support all types of public transportation service.

Non-Residential

Land uses should have the potential to generate ridership throughout the day and, ideally, during the off-peak periods — midday, evening hours, and weekends. High levels of off-peak ridership can greatly improve public transportation efficiency. As an example, a mixed-use area containing restaurants, a museum, a theater and retail stores has greater potential to generate bus and rail riders than an area with only retail stores. Adding housing to the mix can improve the situation substantially. Redevelopment of old buildings and dilapidated city areas offers a second opportunity to create land uses compatible with public transportation.

Employment

Even more than residential densities, public transportation ridership increases as employment density rises. Concentrated employment areas offer the greatest opportunity to generate ridership on public transportation.

In most areas, the **local** bus service threshold for business is approximately 50 to 60 employees per acre.

Low density employment areas, with a range of .5 to 2.0 floor area ratio (FAR – a ratio comparing the amount of total floor space to the total land area), such as the areas around Paine Field and along State Route 527, generate enough traffic to clog the roads but insufficient riders to sustain bus service. However, businesses falling into this category may be served by other types of services such as subscription bus and car/vanpools.

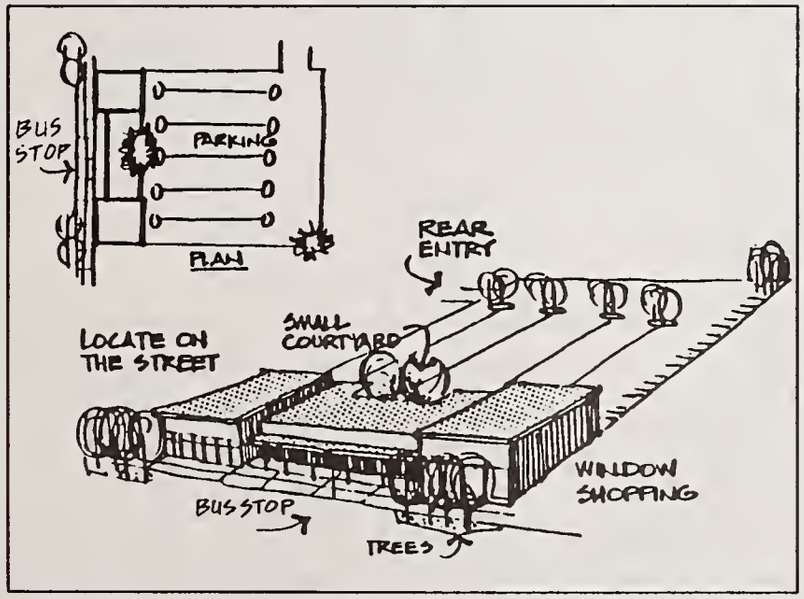
Compatibility Criteria, continued

8 Land Uses Have Minimal Parking

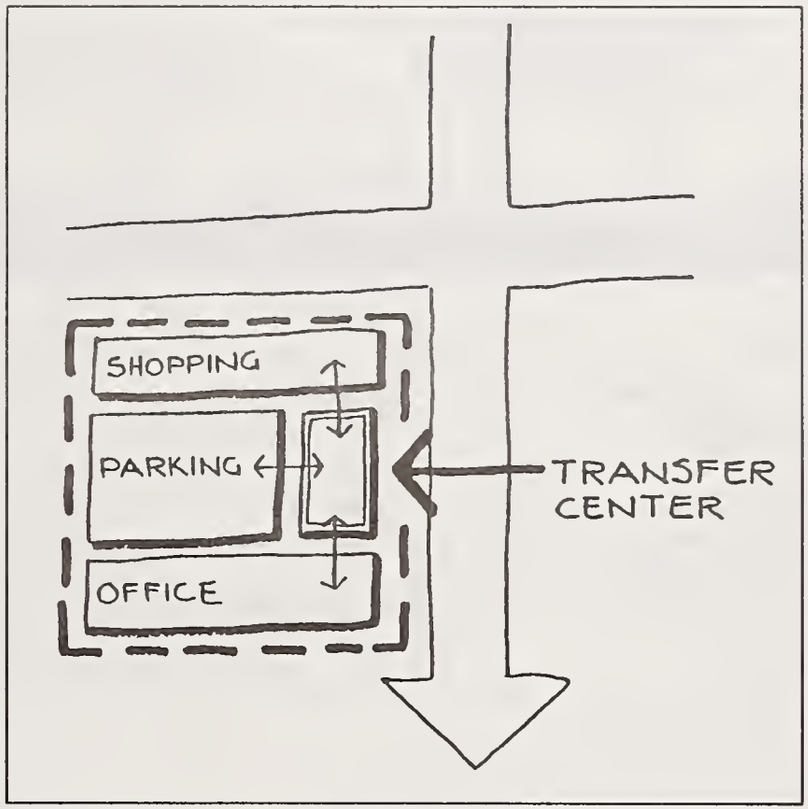
Ridership for all types of public transportation increases as the price of parking increases or as the availability of parking decreases.

Zoning ordinances can limit the amount and location of parking. For example, regulations can require that parking lots be located at the sides or rear of a building, leaving "front door" access for bus users and pedestrians. Single-occupant vehicle parking can be made expensive or parking can be reserved for rideshare vehicles.

Restricting parking requires that adequate alternatives are in place. Before communities or developers consider dramatic changes in parking policy, they must work with transit operators to assure that quality public transportation service is available.



Locate new centers on the street with parking in the rear.
Source: Accommodating the Pedestrian, Richard Untermann, (New York, 1984)



Minimize space for parking while emphasizing the connection to transit.
Source: Market Based Transit Facility Design, Harvey Z. Rabinowitz, et al., (February, 1989)

Transportation Compatibility Chart

The following table charts the compatibility between community activities and various modes of transportation.

● Most Compatible
◗ Sometimes Compatible
▲ Park & Ride Lot Service is Feasible
♦ Employee Ridesharing is Feasible (Car/Vanpool)
★ Limited Bus Service Feasible For Special Events

Activity	Private Auto	Local Transit	High Capacity Transit	Ride-share Services
Commercial				
Hotels	◗	●	●	
Motels	●			
Indoor Amusement	◗	◗	◗	
Movie Theaters	●	●	●	
Restaurants	◗	◗	◗	
Shopping Centers:				
Neighborhood	●	●	◗	
Community	●	●	●	♦
Regional	●	●	●	♦
Auto-Oriented Businesses	●			
Drive-In & -Thru Businesses	●			
Highway Commercial	●			
Retail:				
Small Sized Stores#	◗	◗	◗	
Medium Sized Stores	◗	◗	◗	
Large Sized Stores+	●			
Discount Stores	●			
Department Stores	◗	●	◗	
Large Durable Goods Stores	●			
Convenience Stores	●	●	◗	
Beauty & Personnel Services	◗	●	◗	
Gyms & Health Clubs	●	●	◗	

Activity	Private Auto	Local Transit	High Capacity Transit	Ride-share Services
Residential*				
0 - 4 Units/Acre	●			▲
4 - 7 Units/Acre	●	●		▲
7 - 15 Units/Acre	●	●		▲
15 - 24 Units/Acre	◗	●	◗	▲
Over 24 Units/Acre	◗	●	●	▲
Institutional				
High Intensity Recreation	◗	●	◗	★
Cultural Facilities	◗	●	◗	★
Day Care Centers	●	●	◗	▲
Parks	●	◗	◗	★
Nature Preserves	●			
Educational Institutions:				
Elementary	●			
Intermediate	●	●		
Secondary	●	●	◗	
College	◗	●	●	♦
Burial Facilities	●			
Religious Facilities	●	●		
Correctional Facilities	●	●	◗	♦
Social Service Agencies	●	●	●	♦
Government Agencies	◗	●	●	♦

* Single, multi-family, and congregate residential uses
\# Under 1,000 square feet + Over 5,000 square feet

Transportation Compatibility Chart, continued

● Most Compatible
◗ Sometimes Compatible
▲ Park & Ride Lot Service is Feasible
◆ Employee Ridesharing is Feasible (Car/Vanpool)
★ Limited Bus Service Feasible For Special Events

Activity	Private Auto	Local Transit	High Capacity Transit	Ride-share Services
Business				
Professional Offices	●	●	●	◆
General Offices	◗	●	●	◆
Real Estate Offices	●			
Financial Institutions	◗	●	●	◆
Business Support Services	●	●	●	
Medical Facilities	●	●	●	
Hospitals	●	●	●	◆
Veterinary Clinics	●			
Suburban Employment Parks				
Low-Density	●	◗	◗	◆
Med-Density	◗	●	●	◆
High-Density		●	●	◆

Activity	Private Auto	Local Transit	High Capacity Transit	Ride-share Services
Industrial				
Warehousing	●	◗	◗	◆
Wholesaling	●	◗	◗	◆
Distribution	●	◗	◗	◆
Manufacturing Employment:				
Low-Density	●	◗		◆
Med-Density	●	●	◗	◆
High-Density		●	●	◆
Agricultural, Horticultural	●			◆
Maintenance Facilities, Shops	●			◆

Chapter 4: Model Public Transportation Supportive Goals and Policies for Community Plans

- Community Plan Support for Public Transportation
- Goal I: Public Transportation Systems Goal
- Goal II: Public Transportation – Compatible Land Use Goal
- Goal III: Special Population Goal
- Goal IV: Public Transportation Facilities Goal
- Goal V: Transportation System Management Goals

Community Plan Support for Public Transportation

These model goals and policies are intended to be examples for communities to start community discussions about transportation and land use issues. **These model goals and policies must be tailored to meet each community's own situation.** Ideally, similar goals and policies — along with design standards developed to implement them — will be consistent throughout Snohomish County and, ultimately, the region since effective transportation systems do not stop at political boundaries.

Public transportation can be a tool for improving quality of life within our communities, but only if it is included in the plans and policies that shape development within the community. Each community needs to consider how it can best incorporate techniques for making developing land uses and road networks support public transportation and, conversely, making public transportation support larger community goals.

Public transportation as a part of land use and transportation system development is gaining in importance in the State of Washington. For example, under the **State Environmental Policy Act** (SEPA), environmental impact mitigation requirements for development proposals — or project denials — must be tied to a community's goals and policies. Public transportation should be included among those goals and policies.

The Local Transportation Act (the LTA), approved by the Legislature in 1988, is designed to assist local and regional jurisdictions develop programs to jointly fund transportation improvements required because of growth and economic development in their areas. The Act requires that the programs "indicate how public transportation and ride-sharing improvements and services will be used to reduce off-site transportation impacts from development" (39.92.030 R.C.W.).

The Transportation Improvement Board (TIB) which funds local road improvements gives priority to "multi-modal solutions for projects including transit, high occupancy vehicle lanes or rail" (WAC 479-113-011). Such multi-modal solutions need to be supported by local planning.

Transportation Benefit Districts (TBDs) were authorized by the 1987 Legislature. TBDs can be created to finance road improvements through funding mechanisms such as bonds, benefit assessments and impact mitigation fees. Inclusion of high occupancy vehicle facilities in a TBD program would support the TBD legislative purpose.

Preamble:
It is in the interest of this community to integrate public transportation into the community to enhance mobility and the quality of life for our citizens. In order to solve the problems of increasing traffic congestion, air pollution and the loss of land to parking and roads, we must develop goals, policies, and strategies to better integrate public transportation into our transportation and land use planning programs.

Goal I: Public Transportation Systems Goal

Goal I:
Assure the provision of local and regional public transportation systems which contribute to the relief of traffic congestion, promote energy conservation, and enhance mobility for the community.

Objectives

1. Plan, develop, and maintain an integrated transportation system that moves people efficiently and safely in the community as well as in the region.

2. Develop community circulation systems which conserve land, financial, and energy resources, facilitate public transportation services, and provide safe and efficient mobility.

Policies

1. Improve the present transportation system by working cooperatively with other local jurisdictions, the Puget Sound Council of Governments (PSCOG), the State Department of Transportation (WSDOT) and the transit agencies.

2. Improve the usability of public transportation, particularly for those people who habitually travel by auto to school, work, and other activities.

3. Encourage private participation in the supply of public transportation and paratransit services.

4. Encourage energy conservation by making public transportation services a priority in the community.

5. Work with the region's planners to plan for regional high capacity transit (HCT) facilities to serve the community (if applicable).

6. Coordinate the location of bus facilities with existing or new ferry terminals (if applicable).

Implementation Strategy

1. Work with the local transit agencies to plan and develop the appropriate public transportation services to meet the needs of the people in the community.

2. Work with the regional transportation agencies and adjacent jurisdictions to determine how this community can best be served by the regional transportation system.

3. Charge a broad-based community committee to work with the planning commission as it develops a transportation plan that includes a strong public transportation element and implementation program.

4. Commit financial resources for transportation planning and implementation programs.

5. Support funding to enhance public transportation services to the community.

6. Work with the transit systems and the WSDOT to develop a system of secure, conveniently located park-and-ride lots to encourage use of bus and rideshare services.

Goal II: Public Transportation-Compatible Land Use Goal

Goal II:
Establish land uses and urban patterns that support public transportation and promote ridership.

Objectives

1. Coordinate land use decisions with existing and planned public transportation services.
2. Include a strong public transportation element in future community and transportation plans and capital improvement programs.
3. Employ site planning and design criteria to make public and private development supportive of public transportation.
4. Develop a mixed-use land development ordinance which permits the mixing of land uses to reduce trip-taking and support public transportation.

Policies

1. Develop land use patterns that facilitate multi-purpose trips and minimize the number and length of vehicle trips.
2. Utilize major transportation routes as a tool to help influence development patterns.
3. Plan for higher density land uses along public transportation corridors.
4. Plan activity centers* with a mixture of employment, mid- to high-density housing, shopping, entertainment, government, cultural, recreational and educational facilities.
5. Connect adjacent residential areas with other land uses by removing barriers that restrict bus, pedestrian, and bicycle circulation.
6. Require developers, through the established permit process, to include public transportation compatible designs in their projects.
7. Promote residential developments at densities and in areas which can be served by public transportation.
8. Require employment centers to be developed at densities and in areas which can be served by public transportation.
9. Require activity centers to be developed at densities and at locations which can support public transportation.
10. Promote a mixture of land uses at public transportation facilities** and private employment centers to encourage use of bus and ridesharing services.

* "Activity center" is defined as any major attraction that brings together 100 or more people at any given time. Examples are shopping centers, community colleges and recreational facilities. "Employment centers" are places with 100 or more jobs at a single site or at adjacent sites.

** "Public transportation facilities" are bus stops, transit centers, park-and-ride lots, high occupancy vehicle (HOV) lanes and pullouts, ferry terminals, rail stations, etc.

Goal II: Public Transportation-Compatible Land Use Goal, continued

Implementation Strategy

1. Educate the community to the opportunities for public transportation serving various types of land uses.

2. Amend existing community plans and programs to support public transportation services.

3. Amend land regulation ordinances, such as zoning and subdivision, plus administrative procedures to integrate public transportation services and facilities.

4. Work with local transit agencies to review development applications early in the review process. Require developers to coordinate with the local transit agency in the early stages of a development project.

5. Work to establish mixed-use activities such as shopping and other services at park-and-ride lots, where appropriate.

6. Work to establish daycare facilities at park-and-ride lots and at public and private employment centers served by public transportation, where appropriate.

Educate the community to the opportunities for public transportation serving various types of land uses.

Goal III: Special Population Goal

Goal III:
Improve public transportation service accessibility for elderly, disabled, low and moderate income, youth, and other mobility-disadvantaged people.

Objectives

1. Recognize in community planning the special transportation needs of the elderly, young, disabled, and low-income persons who may not be adequately served by the existing transportation system.

2. Assure the use of barrier-free access criteria for public and private facilities.

Policies

1. Create safe, barrier-free access to public transportation and pedestrian facilities.

2. Assure that all State and local barrier-free codes are used in all development and redevelopment projects.

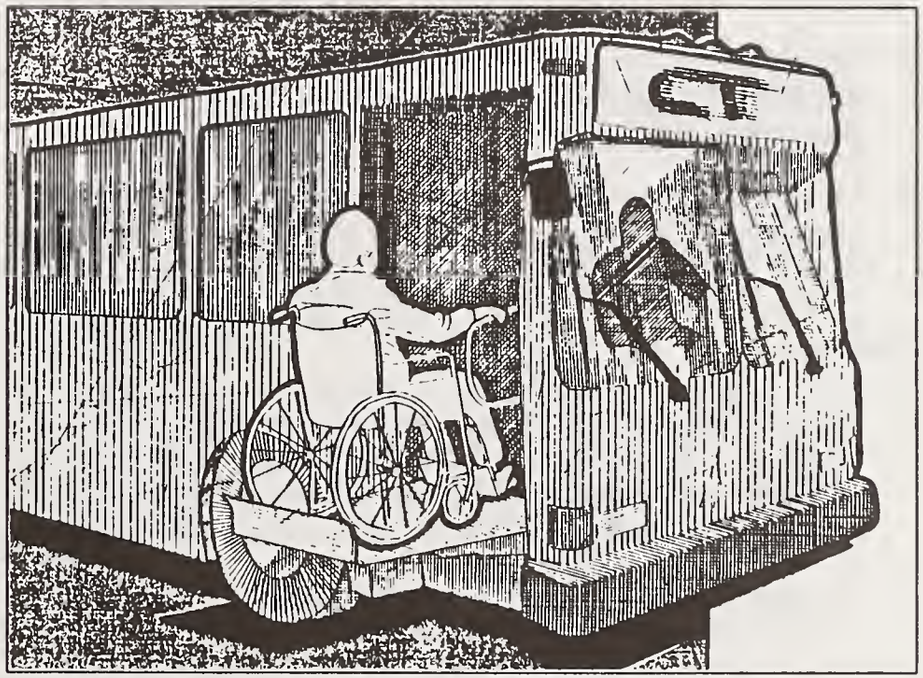
3. Identify how community projects can support transit and make services more usable and desirable to special populations.

Implementation Strategy

1. Establish, or encourage the local transit operator to establish, a citizens' advisory committee to recommend programs and actions to the community's decision makers on special transportation issues.

2. Support funding programs to enhance transportation service between homes and medical and social services, recreational and employment opportunities.

3. Enforce the Washington State Regulations for Barrier-Free Facilities on all public and private development projects (WAC 51.10).



Barrier-free transit access

Source: Elderly and Handicapped Transportation Study, Community Transit, (January, 1981)

Goal IV: Public Transportation Facilities Goal

Goal IV:
In areas served by public transportation, incorporate and give priority to public transportation in the design of all major public and private projects.

Objectives

1. Use generally accepted transit-compatible design standards to make public and private projects accessible by public transportation.

2. Use generally accepted pedestrian access and barrier-free design standards for all public and private projects.

Policies

1. As a condition of development approval in areas served by public transportation, require the provision of public transportation facilities in, or adjacent to, public and private developments.

2. Provide safe and convenient pedestrian access between developments and public transportation facilities.

3. Ensure that arterial streets are designed for high occupancy modes of transportation:

   a. Provide for high occupancy vehicle (HOV) priority at major intersections and along major corridors;

   b. Provide facilities for buses such as shelters and turn-out lanes;

   c. Provide bicycle and pedestrian facilities — such as pathways and marked crosswalks — when planning and constructing street improvements; and

   d. Assure that major intersections and arterials are designed for heavyweight vehicle movements.

Implementation Strategy

1. Adopt and integrate the following types of design standards into the community's development standards:

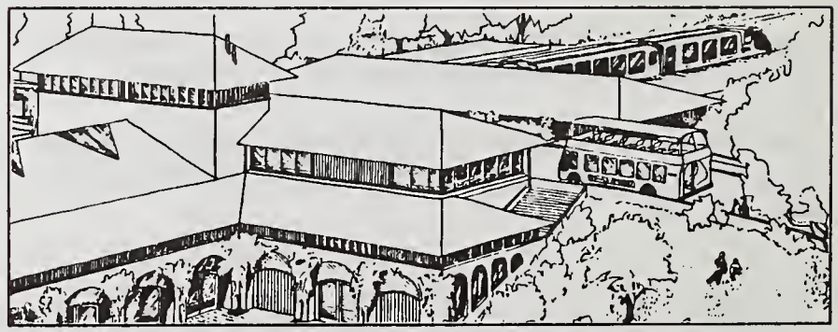
   a. Public transportation access

   b. Pedestrian/bicycle access

   c. HOV facilities on streets

   d. Heavyweight vehicles on streets

2. Educate the community to the benefits of using these new standards.



Integrate transit and development.
Source: Transformation of Transportation, Office of Appropriate Technology, (Sacramento, CA)

Goal V: Transportation System Management Goals

Goal V:
*Improve circulation in and around the community by the management of existing transportation facilities and by promoting alternatives to single-occupant auto use.**

Objectives

1. Emphasize non-structural solutions to circulation system deficiencies in the community.
2. Adopt and enforce a Transportation System Management Ordinance for the community.
3. Minimize the amount of auto parking in public and private developments.

Policies

1. Encourage commuters to use car/vanpool programs and public transit as alternatives to the single-occupant automobile.
2. Develop management plans that cover parking, congestion, and access to encourage use of high occupancy vehicles and make public transit operate more efficiently.
3. As a condition of development approval in areas served by bus, require activity centers and employment centers to promote and maintain ridesharing, bus use and incentive programs.
4. Consider incentives for those developers who actively promote and encourage ridesharing and public transit programs.
5. Encourage the formation of transportation management associations (TMAs) in major retail, office, and industrial centers to assist in achieving public transportation use.

Implementation Strategy

1. Establish a special community committee to educate the community and develop a TSM ordinance with financial and other incentives. New parking regulations would be a part of this effort. (A model TSM ordinance to use as a starting point is included in Chapter 6.)
2. Adopt a transportation management ordinance for the community and amend the zoning ordinance with the new parking regulations.
3. Provide the resources to enforce the transportation management ordinance in the community.
4. Develop community transportation management demonstration projects for municipal facilities and employees.

* Transportation management includes both techniques to increase the efficiency of the existing transportation system and techniques to encourage use of alternatives to the single-occupant auto. See Chapter 6.

Chapter 5: Public Transportation – Compatible Zoning

- ❑ *Zoning Provisions for Conventional Transit*
- ❑ *Zoning Provisions for High Capacity Transit*
- ❑ *Specialized Zoning Techniques*

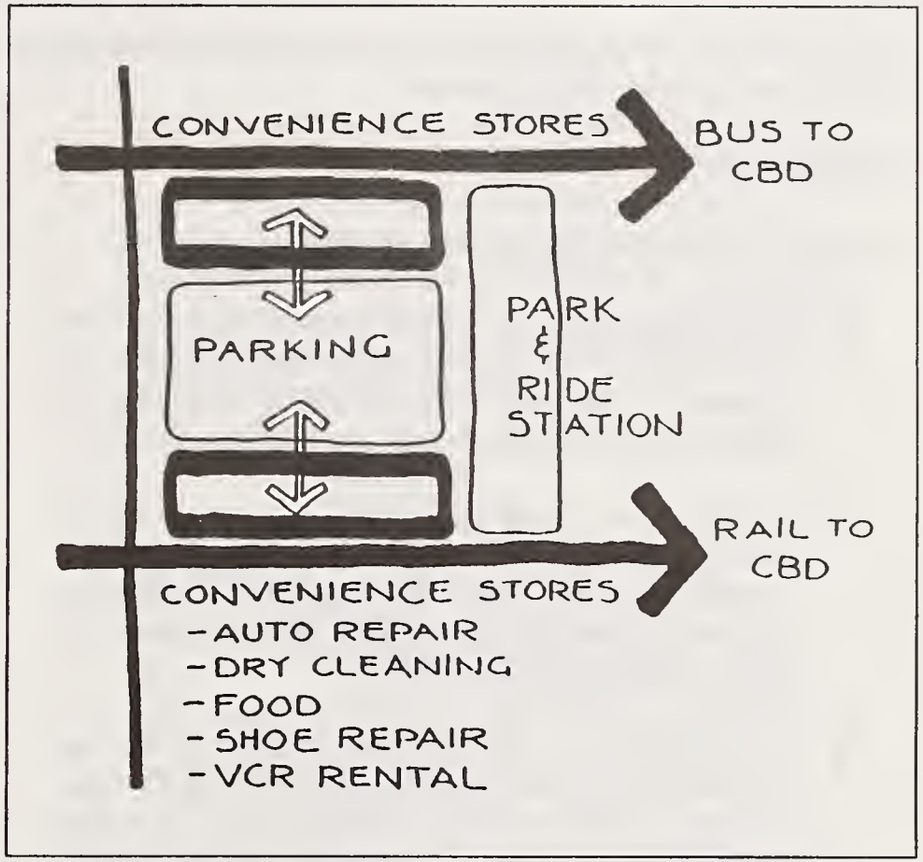
Introduction

If a community's plan contains public transportation-friendly goals and policies, then the zoning provisions can put those goals and policies into action.

Zoning provisions are the most commonly used techniques to carry out a community's priorities. Zoning provisions are not intended to set policy, but implement policy. If a community's plan contains public transportation-friendly goals and policies, then the zoning provisions can put those goals and policies into action. (Refer to Chapter 4, "Model Public Transportation-Compatible Goals and Policies").

Public transportation-compatible zoning provisions can be added to existing zoning ordinances to become the regulatory basis for new development and redevelopment. Eventually, public transportation-compatible development will be found in all areas in a community.

This chapter will outline issues for zoning provisions that can be used to enhance bus ridership — the most frequently used mode of public transportation; then zoning issues for high capacity transit (HCT) will be explored; and lastly specialized zoning techniques for encouraging transit ridership will be briefly discussed.



Compatible land uses requires compatible zoning provisions.
Source: Market Based Transit Facility Design, Harvey Z. Rabinowitz, et al., (February, 1989)

Zoning Provisions for Conventional Transit

This section discusses guidelines for zoning provisions targeting conventional public transportation.

General Provisions

These provisions apply to all zoning districts.

- Include definitions of public transportation modes and facilities in the definition section of the zoning ordinance. (Refer to the appendix of this guide for "Public Transportation Terms" for model definitions.)
- Establish a low percentage (of whatever measure the zoning ordinance uses) as the threshold requirement for the application of transit-compatible standards to redevelopment, major additions and changes to existing land uses and buildings.
- Include a provision to establish a basis for measuring the distance of pedestrian trips, such as the following example: "Measure pedestrian trips by the actual walking distance, not by the straight line between the origin and destination."
- Permit compatible home occupations in all residential zoning districts. Compatible home occupations need to be defined by the zoning ordinance.
- Determine with the local transit operator a procedure to include the transit operator in the review of commercial, residential (including residential subdivisions), industrial, and office applications.

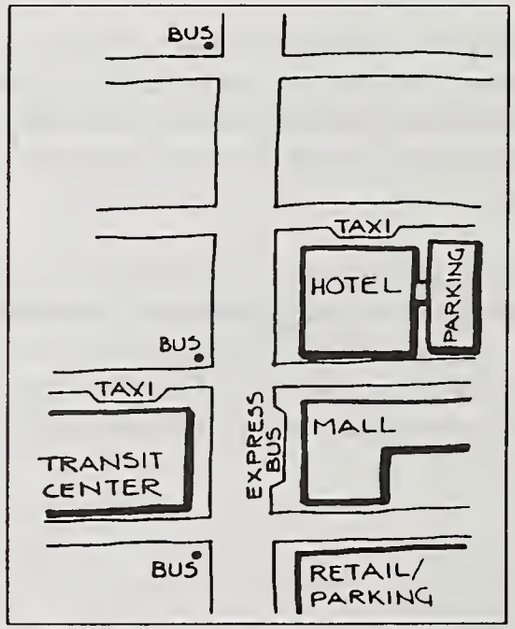
Land Use Guidelines

The main goal of these guidelines is to encourage the appropriate locations of those land uses which generate public transportation ridership. Include the following guidelines to help make zoning districts compatible with public transportation service:

- **Incorporate mixed, compatible land uses into all zoning districts — permit the combining of complementary office, service, residential and retail uses.**

➤ ***Rationale***

Mixed land uses can reduce the need for and the number of auto trips, encourage walking between land uses, and encourage public transportation usage.



Source: Market Based Transit Facility Design, Harvey Z. Rabinowitz, et al., (February, 1989)

Zoning Provisions for Conventional Transit, continued

- **Create a neighborhood commercial district or allow compatible convenience retail uses within residential areas.**

➤ *Rationale*

Neighborhood commercial areas can reduce both the number and length of auto trips and walking may become possible. People may travel to the workplace on transit knowing that convenience shopping is located close to the beginning or end of a transit trip. It is not necessary to drive a car to work if shopping can be done during a commute.

- **Permit on-site services such as daycare, pharmacy and convenience stores in residential developments and at park-and-ride lots; and allow compatible uses such as restaurants, banks, service, daycare, convenience stores in employment centers.**

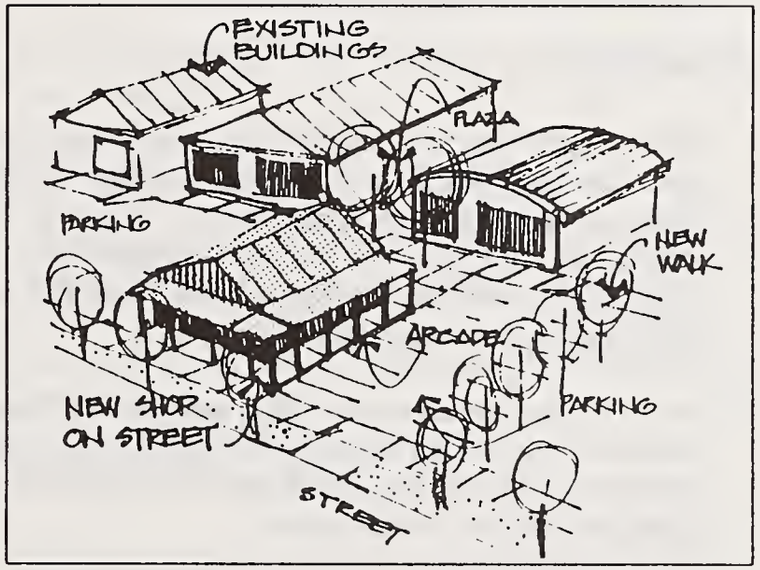
➤ *Rationale*

Mixing land uses is also necessary within buildings and individual developments to encourage public transportation use and walking between buses, and reduce the need for a car to run errands during the work day. The location of daycare is an important consideration for many parents deciding whether they drive or ride public transportation to work.

- **Encourage public transportation-compatible in-fill development on bypassed vacant parcels in developed areas adjacent to bus routes and stops.**

➤ *Rationale*

Public transportation works best in developed urban environments. Vacant parcels of land within 750 feet of bus stops or other transit facilities do not allow public transportation to operate efficiently. Using zoning incentives, such as those mentioned in the last section of this chapter, in these areas can encourage public transportation-compatible development. Refer to Chapter 3, "Public Transportation-Compatible Land Uses."



Zoning regulations can create pedestrian oriented design
Source: Accommodating the Pedestrian, Richard Untermann, (New York, 1984)

- **Work with the local transit operators to retain existing bus facilities when vacant parcels are developed.**

Zoning Provisions for Conventional Transit, continued

➤ *Rationale*

Often bus facilities, such as stops, located adjacent to vacant parcels are lost when parcels are developed. While development of vacant parcels may provide additional riders, the development may require the relocation of existing bus facilities. Care must be taken that facilities are provided to serve the new development.

■ **Discourage auto-oriented uses in areas adjacent to bus stops and other transit facilities.**

➤ *Rationale*

Auto-oriented uses are generally low-density land uses such as car sales lots, drive-through retail, or gas stations which are opposite to the higher-density land uses that usually generate riders for public transportation. In addition, auto-oriented uses can generate traffic that can negatively impact transit operations.

■ **On streets in commercial, office, or mixed use areas with bus routes and nearby bus facilities, require pedestrian uses at the street level of buildings to stimulate activity and interest.**

➤ *Rationale*

Public transportation operates best in areas with high levels of pedestrian activity. The design of buildings can contribute to this activity with entrances, windows, and display areas.

■ **Increase residential densities along bus routes and at bus stops. Set minimum densities as well as the maximum density.**

➤ *Rationale*

Public transportation works best in high density areas. Refer to Chapter 3, "Public Transportation-Compatible Land Uses" for further detail.

■ **Increase employment densities in activity centers.**

➤ *Rationale*

Density of the work place is one of the more important factors determining whether people will commute on the bus. Bus service works best in areas with employment densities over 60 employees per acre.

Zoning Provisions for Conventional Transit, continued

Pedestrian Access Guidelines

Public transportation vehicles provide only part of the total trip. Getting to and from the bus is an equally important part of a trip, and is frequently ignored. The main goal of the pedestrian access guidelines is to assure pedestrian access between bus stops and the origins and destinations of riders. Include the following guidelines in the zoning district or site-planning criteria sections of zoning provisions:

- Stimulate pedestrian access by providing landscaped walkways and arcades between:
  - Major buildings within a development
  - Adjacent developments or buildings
  - Major buildings and streets with public transportation facilities

➤ *Rationale*

People will use public transportation if they can walk to and from the bus stop in a safe and protected environment.

- **Provide sidewalks along streets with bus stops and streets leading to bus stops along with safe crosswalks at or near bus stops.**

➤ *Rationale*

Bus riders must have a safe place to walk and wait. Approximately 50% of all bus riders will cross a street getting to or from a bus.

- **Provide sidewalks, walkways and passenger areas at bus stops that are paved with all-weather material. Gravel, grass and similar materials are not considered an appropriate paving material.**

➤ *Rationale*

Pedestrian and wheelchairs must have safe all-weather surfaces to use. People cannot be encouraged to take a bus if they have to traverse through mud, gravel, or dirt to reach a bus stop at either end of a transit trip.

- **Include provisions for weather protection for the pedestrian.**

➤ *Rationale*

Walking to and waiting at a bus stop in the rain and cold does not encourage riders for public transportation.

- **Eliminate barriers that discourage pedestrian access such as:**
  - Walls and berms
  - Large landscaped areas or parking lots between major building entrances and bus stops
  - Walking distances 750-1000 feet
  - Unsafe conditions

Zoning Provisions for Conventional Transit, continued

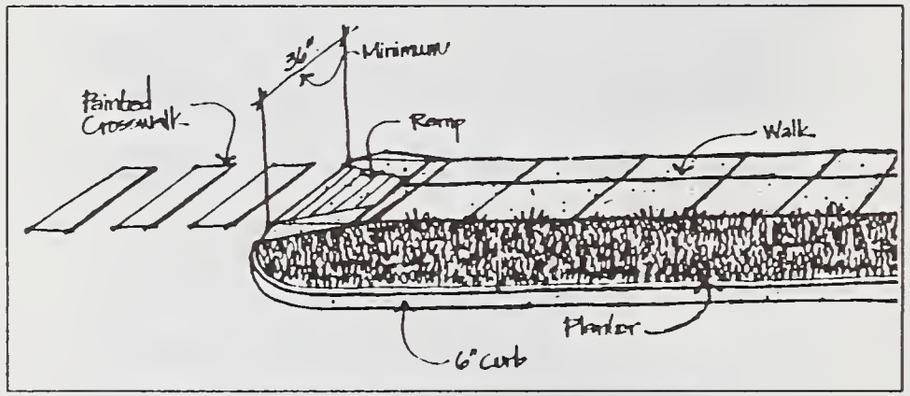
➤ *Rationale*

Public transportation only works well when riders can safely and easily access the system

- **Provide wheelchair ramps and other facilities conforming to the State's barrier-free design standards (WAC 51.10).**

➤ *Rationale*

Accessibility for the disabled is not only required, but is a good practice. Accessibility for the disabled provides good access for all people.



One design for barrier-free sidewalks
Source: Accommodating the Pedestrian, Richard Untermann, (New York, 1984)

- **Provide lighting to improve pedestrian safety and security.**

➤ *Rationale*

Good lighting can help make pedestrian areas safe.

Design Guidelines

The main goal of these design guidelines is to foster designs that encourage pedestrian activity. A pedestrian-friendly, human scaled environment benefits everyone, especially public transportation riders. These design guidelines need to be considered in the design or site-plan criteria in zoning provisions:

- **Cluster major buildings in commercial and residential developments, and at employment centers.**

➤ *Rationale*

Clustering of land uses provides the best opportunities to encourage pedestrian access to a development while shortening walking distances.

- **Orient buildings and main entrances to streets with bus facilities.**

➤ *Rationale*

Buildings and main entrances oriented to public transportation facilities can encourage pedestrian access to a site and reduce the walking distance. Refer to Chapter 8, "Public Transportation-Compatible Site Design."

- **Reduce large setbacks for retail, employment, and multifamily land uses on streets with bus facilities.**

➤ *Rationale*

Large setbacks discourage pedestrian access to public transportation.

Zoning Provisions for Conventional Transit, continued

Parking Guidelines

The handling of parking issues is crucial to creating public transportation-compatible zoning provisions. The main goal of the parking guidelines is to give equal consideration to public transportation as is given to parking for the single-occupant automobile.

It is important to work with the local transit operator before attempting to change parking requirements to assure adequate public transportation service to the affected area is in place. The following parking guidelines must be considered in zoning provisions:

- **Create minimum and maximum parking requirements for certain land uses such as offices, employment and industrial centers.**

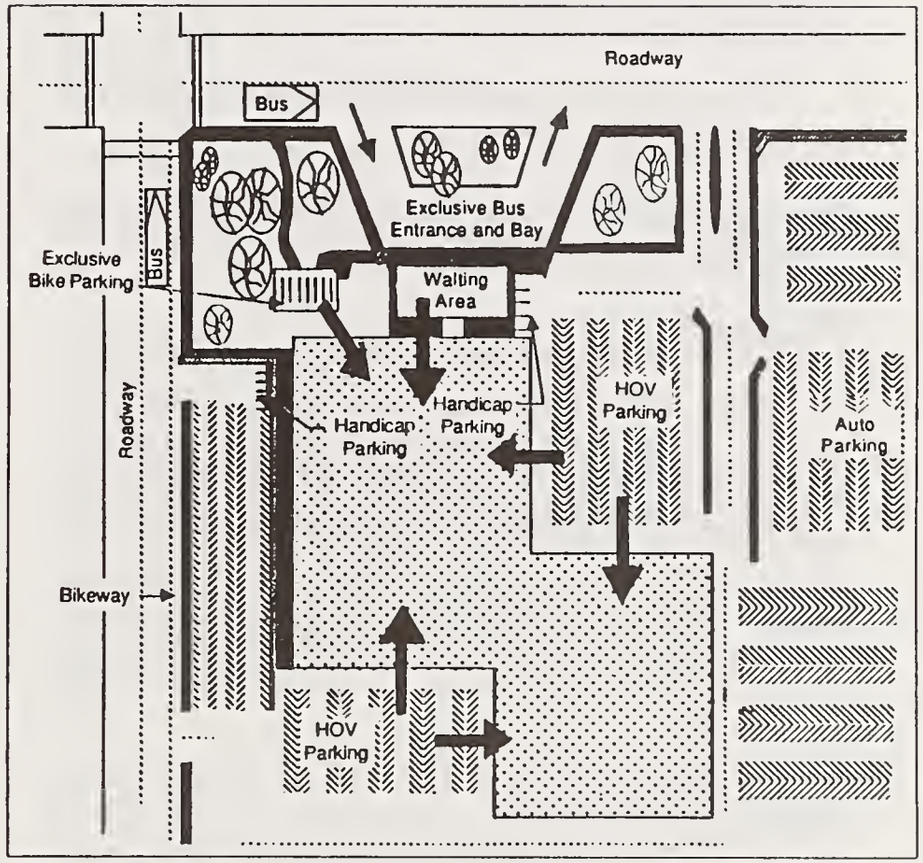
➤ ***Rationale***

Unlimited parking encourages the single-occupant commute.

- **Require transportation system management techniques to provide alternatives to the auto and reduce the parking requirements. Assign enforcement duties to a specific section or persons.**

➤ ***Rationale***

When alternatives to the single occupant car are feasible and readily accessible, the parking requirement needs to be reduced. This becomes a double incentive: first, cost can be shifted from providing parking to providing alternatives; and second, tight parking situations can reinforce the use of alternative modes. Refer to Chapter 6, "Transportation Management: Making Better Use of the Transportation System."



- **Require preferential parking for carpools and vanpools adjacent to major entrances of buildings.**

➤ ***Rationale***

Preferential parking is a quick and easy incentive to those using ridesharing vehicles.

Zoning Provisions for Conventional Transit, continued

- Encourage the shifting of the location of parking to the rear and sides of buildings from the front of buildings when adjacent to bus facilities.

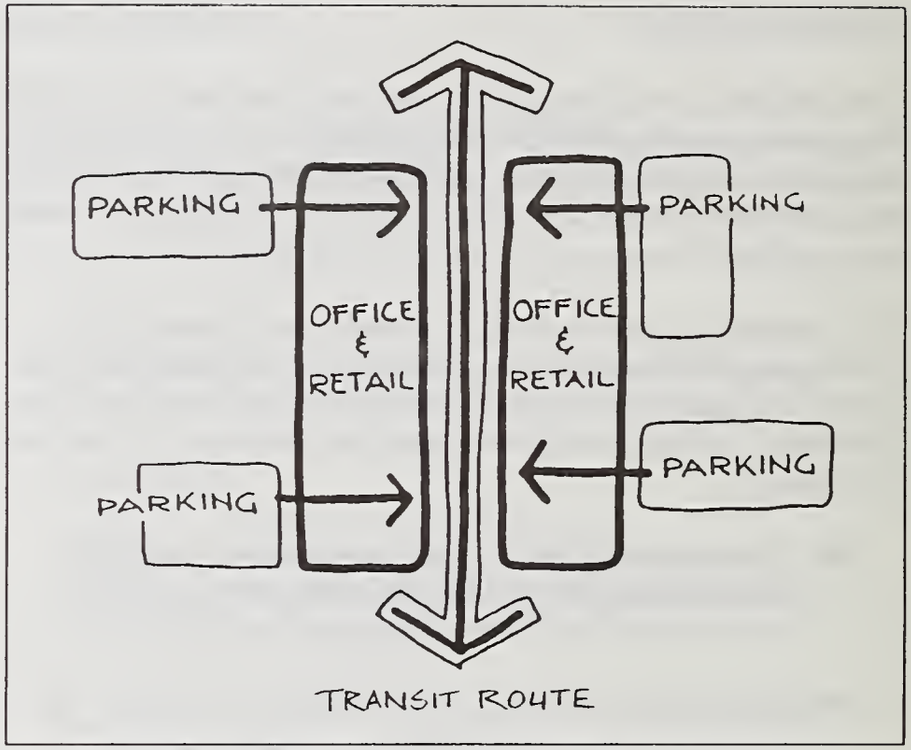
➤ *Rationale*

Large parking lots between a building entrance and a bus stop discourage pedestrian access.

- Reduce parking requirements for uses near public transportation facilities.

➤ *Rationale*

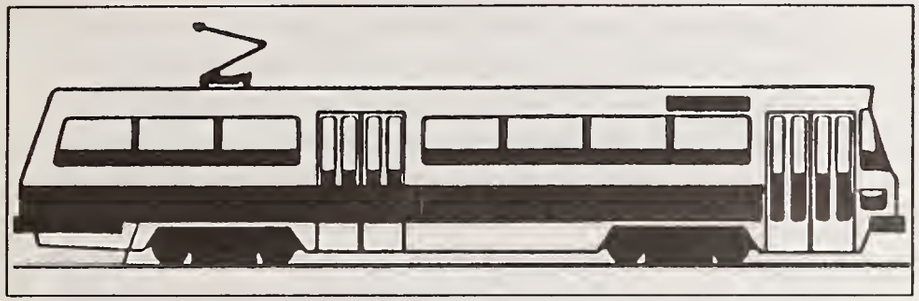
When an area is adequately served by public transportation, the amount of parking can be reduced. This can become an incentive to developers to locate near public transportation facilities.



Parking is located to the rear.

Source: Market Based Transit Facility Design, Harvey Z. Rabinowitz, et al., (February, 1989)

Zoning Provisions for High Capacity Transit



A high capacity transit (rail or express bus) system is being designed for the Central Puget Sound Area. The zoning guidelines that follow have been drawn from a variety of sources and may prove useful to communities which may have high capacity transit (HCT) station areas in the future. Consider these guidelines for zoning provisions for HCT station areas:

- ***Meet the goals and policies of a community's plan.***

  The community plan is the primary vehicle by which residents and land owners "let the world know" what they want to see happen in their community. The community plan alerts everyone, including investors, to the community's priorities.

  The zoning provisions for HCT station areas must reflect those community policies. Stations must be designed to serve the community. Thus, some station areas may be highly developed — to meet the community development goals — while others may have no development at all.

- ***Include land uses that have a potential for increasing ridership.***

  Certain retail and educational uses create the highest ridership per square foot of any use. Hotels, low-density, single-family residences, and light industry create the least ridership per square foot.

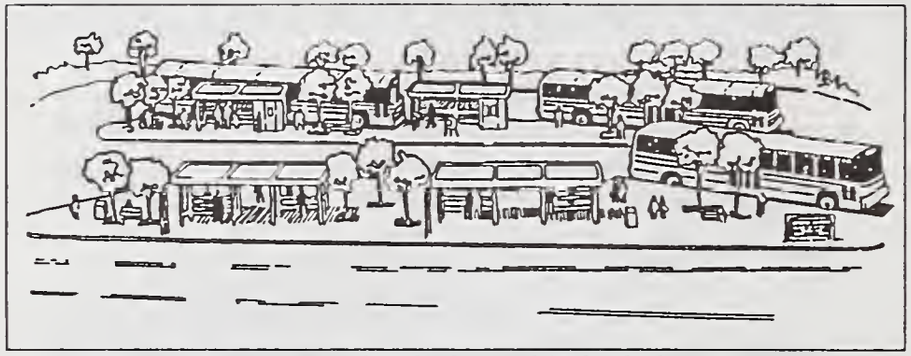
  In areas where such development is appropriate, retail establishments and high-density residential uses are desirable near stations. Major department stores with shopper goods generate more HCT riders than convenience stores. Retail uses create more off-peak trips than most other uses, and thus help spread system use throughout the day.

  Office uses have a mixed record. At central city stations, they can be quite supportive of the HCT system. At some suburban station locations, large scale office developments have proved to be counterproductive. The reason is that suburban office work trips can be very dispersed, often coming from areas not served by public transportation.

  Government offices and others (e.g. medical) which attract regular clients and visitors can generate somewhat more favorable public transportation ridership than offices that do not serve the public.

  Refer to Chapter 3, "Public Transportation-Compatible Land Uses," for additional information on the types of uses that may work best for station areas.

Zoning Provisions for High Capacity Transit, continued

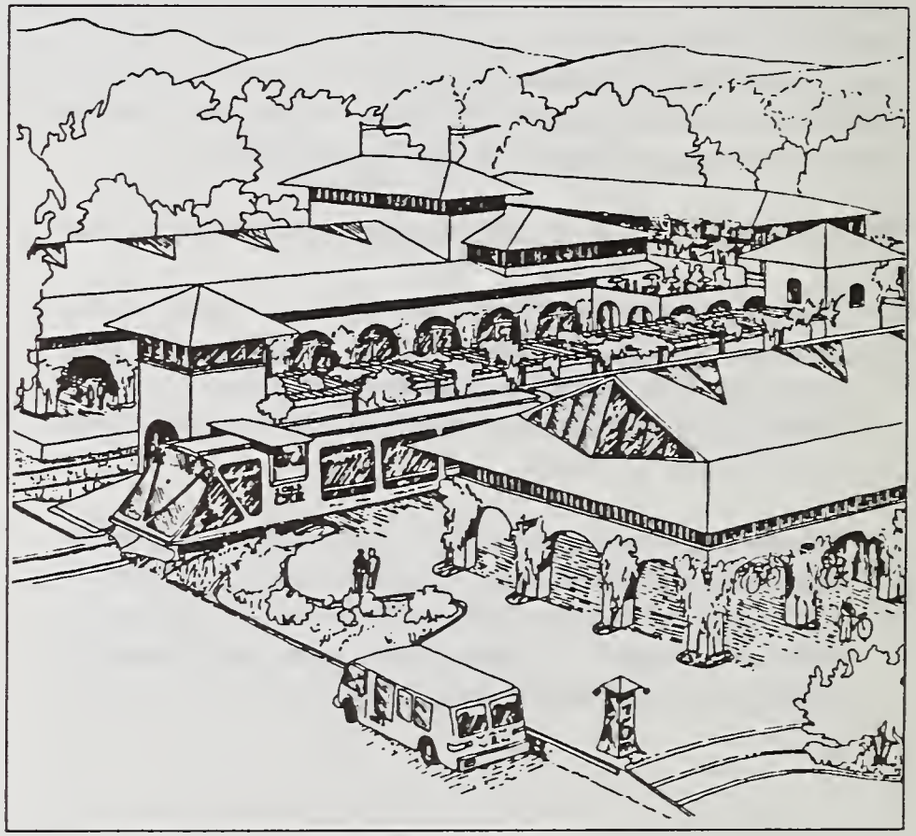


Transfer centers need to be located in high density areas.
Source: Metro Transportation Facility Design Guidelines, Metro, (April, 1985)

- ***Encourage pedestrian use in the immediate station vicinity, and create direct pedestrian access within the 1/4-mile radius between an HCT station and neighboring development.***

In order for development to be supportive of HCT, there must be easy pedestrian access to an HCT station. The most successful developments are those which jointly share entrances and facilities with an HCT station. For example, the Gresham, Oregon Transit Development Zoning District states:

> Development shall promote convenient, direct, and barrier-free pedestrian circulation between buildings and adjacent light rail stations, park and ride facilities, public sidewalks and pedestrian routes. All buildings and sites shall orient their interior and on-site circulation to the closest adjacent rail station.... Enhanced pedestrian spaces and amenities accessible to the public are encouraged, such as plazas, arcades, galleries, courtyards, outdoor cafes, widened public sidewalks (more than six feet wide outside of the public right of way), benches, shelters, street furniture, public art, kiosks, and street vending. Arcades (covered walks) are encouraged between primary building entries and adjacent public sidewalks and on other on-site walkways.... When an area equivalent to 10% of the structure's floor area is devoted to a plaza, galleria or arcade the maximum allowable density may be increased to 2.5 square feet gross floor area/1 square foot of site. (Section 2.0430)



Zone activity centers in station areas.
Source: Transformation of Transportation, Office of Appropriate Technology, (Sacramento, CA)

Zoning Provisions for High Capacity Transit, continued

- ***Promote building orientation that aids pedestrian access.***

  Buildings need to be oriented towards HCT stations. Major entrances, arcades, outdoor areas, or canopies need to be designed to promote access between buildings and the HCT station. Gresham's Transit Development District ordinance states, "...All buildings and primary building entries shall be located to minimize walking distance from a development to the closest adjacent transit station or street containing a transitway." (Section 3.1140)

- ***Reduce or eliminate the amount of required parking.***

  Parking does not contribute to the creation of a pedestrian-oriented station area. Parking consumes large amounts of land without contributing activities that generate HCT ridership.

  If parking lots are necessary, they need to be situated at the sides or rear of the buildings and not hinder the pedestrian access. The exceptions to this guideline are the park and ride lots at suburban HCT stations.

- ***Include design guidelines for HCT station areas.***

  Station areas need to be treated with special design techniques which are usually different from the jurisdiction's standard zoning criteria. Streetscapes, landscaping, access and setbacks require different approaches that necessitate the establishment of design guidelines to create effective station areas. Gresham's Transit District provisions state:

  > Buildings should maintain continuity of design elements such as windows, entries, store fronts, roof lines, materials, pedestrian spaces and amenities, and landscaping.... Buildings should avoid blank walls and provide a series of openings (windows, entries, display areas) on facades which are at street level and/or which face a light rail station (Section 3.1140).

Specialized Zoning Techniques

Many communities exploring public transportation compatibility have found that conventional zoning regulations are inadequate. New zoning techniques have been evolving which help make development compatible with public transportation and have withstood legal challenges. The following is a brief description of those techniques which offer promise to Snohomish County jurisdictions.

■ *Bonus or Incentive Zoning*

Bonus or incentive zoning is an increasingly popular technique. Increased development rights are provided to a developer, usually in the form of higher densities or greater building height, in return for the provision of something deemed to be in the public interest or benefit.

Incentive zoning can be included as a part of a special zoning district or it can be used in conjunction with regular zoning districts. For example, a low floor area ratio (FAR) could be set in the regular zoning districts around bus transfer centers to entice developers to provide the desired improvements and take a bonus.

Other examples: Parking requirements can be reduced, or higher densities can be achieved in exchange for locating near a bus transfer center. Granting FAR bonuses for weatherization improvements to increase pedestrian comfort near or at bus stops could be considered.

The additional benefits granted to a developer and the zoning requirements being waived must be carefully coordinated with a plan to achieve the desired results. Bellevue, Washington, as a part of its downtown plan, will create a "pedestrian friendly" downtown by emphasizing a network of mid-block pedestrian corridors complete with plantings, interesting paving and retail frontages. To accomplish this plan, generous density bonuses will be granted to abutting properties that contribute to this plan.

■ *Overlay Zone*

An overlay zone is a zoning district adopted into a zoning ordinance to overlay the conventional zoning districts and is usually tied to one or more specific parcels of land or larger areas. It is defined by a set of standards used to locate one or more particular uses in a special area or to require special attention to be paid to a particular condition. An overlay zone is approved when an application can meet all standards.

■ *Planned Unit Development Zoning*

Planned unit development (PUD) zoning is a popular zoning technique used to encourage coordinated development of large tracts of land usually in the suburbs. The PUD approach permits more creativity and flexibility in a development than the strict application of traditional zoning regulations.

Also, governments can have greater discretion and control in granting approval and are able to require not only public transportation-compatible land uses, densities, and designs, but also dedication of land for transit facilities.

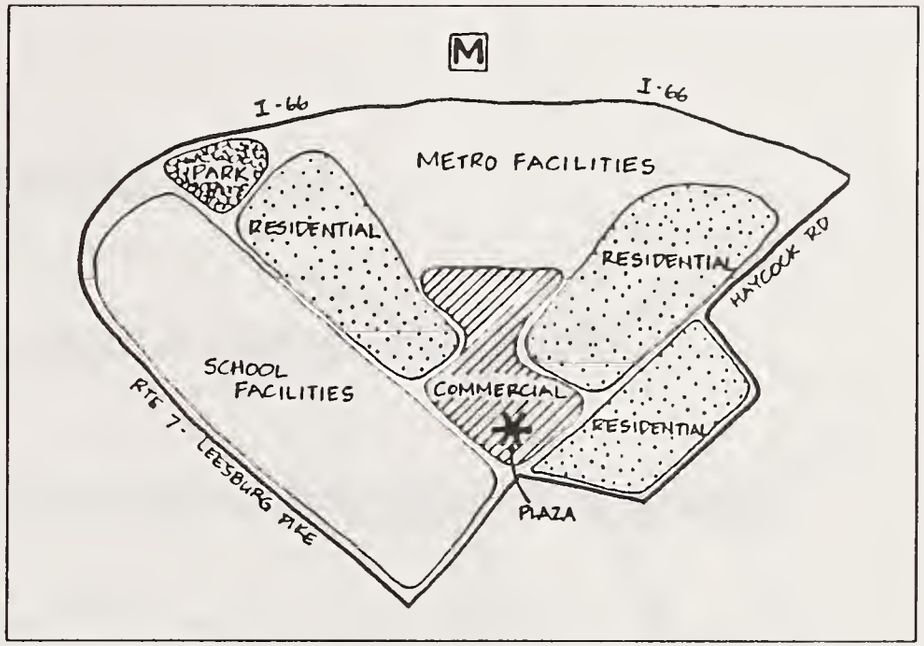
Specialized Zoning Techniques, continued

Special District Zoning

Special district zoning creates a specific zoning district for specific areas because of their unusual character or proximity to a special facility, or special problems which conventional zoning cannot address. Special districts have been most effective when they contain bonus or incentive zoning provisions.

Special zoning techniques have been used in Portland and in San Francisco to encourage high density development and good design in HCT station areas. The purpose of Portland's "Transit Overlay Zone" reads as follows:

> The Transit Overlay Zone encourages a mixture of residential, commercial, and employment opportunities within identified light rail station areas which provide goods and services primarily to public transit and pedestrians. The Transit Zone allows for a more intense and efficient use of land at increased densities for the mutual reinforcement of public investment and private development. The site development standards of the Transit Zone are designed to encourage a safe and pleasant pedestrian environment near transit stations by encouraging an intensive area of shops and activities, by encouraging amenities such as benches, kiosks, and outdoor cafes, and by limiting conflicts between vehicles and pedestrians. (Section 570.010)



Mixed land uses are best for public transit ridership

Source: HCT Suburban Area Planning Development, Stanton-Masten Associates, (November, 1989)

Chapter 6: Transportation Management: Making Better Use of the Transportation System

- Using Transportation Management
- What Makes Transportation Management Work?
- Sample Costs of Transportation Management Programs
- Transportation Management Ordinances
- Selected Transportation Management Provisions

Introduction

> *If transportation management approaches are not embraced, the best efforts toward improving roadways, increasing transit services, and implementing planning programs will be virtually useless.*

Communities around the nation are discovering that making dents in traffic congestion and creating real mobility improvements for their residents means doing more than fixing up roads and beefing up bus systems. Two "tools" have emerged to help in this effort: Transportation System Management (TSM) and Transportation Demand Management (TDM).

Both TSM and TDM techniques are designed to help local governments, land developers, employers, community groups, and others understand how they can make better use of existing transportation facilities, often at relatively little cost.

Transportation System Management techniques include improving roads, intersections and other facilities to make them operate more efficiently and carry more vehicles and people. Building high occupancy vehicle (HOV) lanes is one example of a TSM technique.

Transportation Demand Management encourages the traveling public to use options other than the single-occupant auto or to travel during the least congested times of the day. Programs such as "ridesharing" encourage people to use buses or carpools or vanpools and are examples of TDM.

Some people call TSM the "concrete and steel congestion management strategies" and TDM the "people-based, congestion management strategies." Both are important and both have their places in transportation planning and land use development in our communities. Indeed, it is becoming clearer that if transportation management approaches are not embraced by communities, developers, and employers, especially in the more congested parts of the county, the best efforts toward improving roadways, increasing transit services, and implementing planning programs will be virtually useless.

This chapter is an introduction to TSM and TDM: Interested readers are encouraged to talk to their local transit operator and planning agency for more detailed information on how these measures work and what assistance can be provided for persons interested in developing transportation management programs.

Using Transportation Management

Examples of Transportation Management Techniques

TSM
- HOV lanes on freeways
- HOV lanes on arterials
- Queue-jump lanes for buses
- Park-and-ride lots
- Priority signals for buses

TDM
- Employer-subsidized bus passes
- Preferential parking rates for vanpools/carpools
- Transit/commuting options information for employees
- "Flex time" programs
- Ridematching services

Transportation management programs are carried out through **voluntary implementation approaches** or **mandated approaches**. The following provides a brief introduction to these approaches.

Voluntary Transportation Management Program Examples

■ **Individual Employer Programs**

A large employer voluntarily establishes a ridesharing program for its employees with assistance from the local transit operator. The employer holds a "transportation fair" each year, circulates rideshare information with paychecks, and sets aside reserved parking for carpools and vanpools.

➤ *Voluntary programs operated by single employers can be effective and may be a good solution in low-density areas where TMAs and other group actions may be impossible. Voluntary programs are subject to frequent staff turnovers and to changes in company priorities. In addition, they address what may be an area-wide problem with a site-specific solution. This is particularly true where major employers are located in relative isolation in employment parks.*

*While the program may work well initially, experience elsewhere suggests that over time the employer's level of involvement may decline, incentive programs may no longer be publicized, priority parking for vanpools may not be enforced, and the program may lose momentum and eventually disappear.**

■ **Transportation Management Associations (TMA)**

Transportation Management Associations are generally developed by private sector representatives with the participation of the local transit operator and other affected public agencies. The TMA in Bellevue, Washington, for example, includes membership of downtown Bellevue business leaders, developers, METRO and Community Transit, and the City of Bellevue. TMAs help manage the commuter traffic in specific areas through a variety of strategies that may include limiting parking, initiating transit incentive programs, implementing ridematching services, etc.

TMA membership is voluntary as are all the programs provided by the TMA. Costs are covered by membership fees and by special grants or assessments.

➤ *Transportation Management Associations can be very effective with the right leadership and broad-scale participation from the area. The program can be tailored to the local situation and modified easily. However, since compliance is voluntary, there may be problems enforcing some program elements.*

* A joint committee of Metro and SNO-TRAN has funded a study of developers' TSM program compliance. The results are expected in 1990.

Using Transportation Management, continued

Mandated Transportation Management Program Examples

- **Ridesharing Ordinances**

A local jurisdiction passes an ordinance requiring:

- All small employers with less than 50 employees to publicize the local transit operator's bus and ridesharing services; and
- All mid- to large-sized employers (50 or more employees) to prepare a plan for involving employees in public transportation programs, creating preferential parking for carpools and vanpools, setting up walking and bicycle use incentive programs, etc.

Another jurisdiction has a similar TDM ordinance, but this one also requires:

- Appointment of a transportation coordinator by each large employer and fines to mandate compliance.

➤ *Rideshare ordinances are hard to monitor and administer since employers may try to encourage ridesharing and bus use, but be unable to get large numbers of employees to do so. In addition, most of these ordinances are so vague, particularly in their requirements for small employers, that they may have no practical effect.*

- **Agreements with Developers**

Many communities require TSM and/or TDM programs as mitigation measures for traffic that results from building a large, new development. The developer then passes on these program requirements in lease negotiations to tenants. Generally, compliance by the tenant is voluntary, although some jurisdictions require lease agreements to call for ongoing participation.

➤ *While physical TSM improvements (such as adding bus pull-outs or shelters) are fairly easy to require and have been completed by developers under such agreements, long-term TDM actions, such as providing rideshare coordinators at developments, are harder to enforce. Locally, little is known about compliance with such agreements over time.*

- **Transportation Management Ordinances**

Transportation management ordinances are in place in many communities as tools to reduce use of single-occupant autos especially during peak periods. Generally, the ordinances require all employers (except the very smallest) to prepare management plans targeted to meet certain trip-reduction goals. The local jurisdiction provides technical support and ordinance enforcement and reports back to the community on the success of the program.

➤ *Experience shows that this approach can work if sufficient resources (public and private) are allocated to employee information and incentive programs and if the allowed demand management tools are (a) effective and (b) properly developed and maintained. For example, commuter ridematch efforts have to be consistently provided so that carpool/vanpool occupancies remain high.*

Using Transportation Management, continued

■ Transportation Demand Programs

Communities may require existing developments to institute demand management programs to mitigate against air quality or traffic problems. In some communities, TDM requirements are attached to business license renewals and in others, the jurisdiction provides reduced-cost transit passes as incentives to existing businesses to develop TDM programs.

➤ *While most transportation management programs have focused on new developments, this approach reaches existing employers and other traffic generators. Its use in this state is questioned. In its report,* ***Transportation Demand Management Policy Guidelines****, METRO indicates that Washington jurisdictions may be restricted in imposing these types of regulations on existing businesses .*

What Makes Transportation Management Work?

To work, transportation management programs have to be carefully planned and implemented, and the local transit operator is there to help.

As the material above indicates transportation management programs can either be voluntary or required. Both have their purposes, but mandatory programs seem to be most effective in the long run for the following reasons:

- ***Everyone knows what to expect.*** The rules are established in ordinances and can only be changed by formal procedures.
- ***The programs are ongoing.*** Properly drafted and supported regulations continue to be in effect even if property changes hands or company priorities shift.
- ***Solutions tend to be area-wide.*** Since programs are not developed in isolation by individual property owners, "economies of scale" may be realized by programs that are undertaken throughout an area.
- ***Costs may be shared.*** Marketing strategies, costs of printing, even acquisition of passenger vans or other equipment can be shared by area participants, although this is also true for some voluntary programs (such as those operated by TMAs).

Whether it is mandatory or voluntary, a transportation management program is most likely to be successful where:

- There is a clear understanding of the problem and widely-shared interest in resolving the problem;
- There is understanding of what the various transportation management tools and strategies can do, how effective they will be under local conditions, what their implementation costs (up front and ongoing) will be, and how they will be monitored and revised over time;
- There is a coalition of private and public sector and transit representatives who are willing to spend the time and money to create, market and enforce the program; and
- Local land uses, parking availability, transit and rideshare services, and pedestrian facilities are conducive to safe and comfortable travel by other than the single-occupant auto.

Transportation management tools can run the gamut from being very simple (and inexpensive) to being complex and costly to set up and operate over time. The examples listed above are just a sampling of the many variations of programs that can be considered to help reduce the use of autos for work and other trips.

Some of these techniques or programs can be easily implemented by a developer, an employer, or the transportation coordinator at a college or other major trip-generator. Others require the assistance of specially trained people available from the local transit agency or from other resources such as the Urban Mass Transportation Administration (UMTA).

Sample Costs of Transportation Management Programs

The five strategies that follow are examples of transportation management programs that range in cost from under one thousand dollars to many thousands of dollars. The METRO report lists many other examples and provides extensive details on them.*

Strategy Example 1: Commuter Information Center

Install permanent information display with holders for brochures and timetables. The transit operator can provide construction specifications and materials, and owners can pay for the design, construction, and maintenance.

Cost Examples:

Standard wall-mounted triple board with:

- 12 timetable pockets & 2 brochure pockets = $ 450
- 36 timetable pockets & 6 brochure pockets = $ 800

(Rates vary depending on materials used)

Strategy Example 2: Work Site Promotions: Transit Fairs

Once a year events are held at the work site to inform employees about commuting options and incentive programs. Usually the events are two to four hours long (depending on number of employees). The local transit operator(s) provides handouts, makes the presentations, and answers questions.

* *The material which follows was taken from cost estimates prepared by King County METRO and reported in* Transportation Demand Management Strategy Cost Estimates *(July 1989).*

Cost Examples:

For each work site promotional event:

- 850 Employees or less = $100 + 8 hrs. staff time. Budget includes food, beverages, any rentals, prizes, etc.

  Staff time includes setting up, cleaning up, planning meetings with transit operator, publicity, etc.

- 850-8,000 Employees = $1,500 + 16 hrs. staff time. Budget includes food, beverages, balloons, music, rentals, etc.

  Staff time includes arranging for other exhibits, arranging entertainment, setting up, cleaning up, soliciting prizes, planning meetings, publicity, etc.

Strategy Example 3: Alternative Work Hours

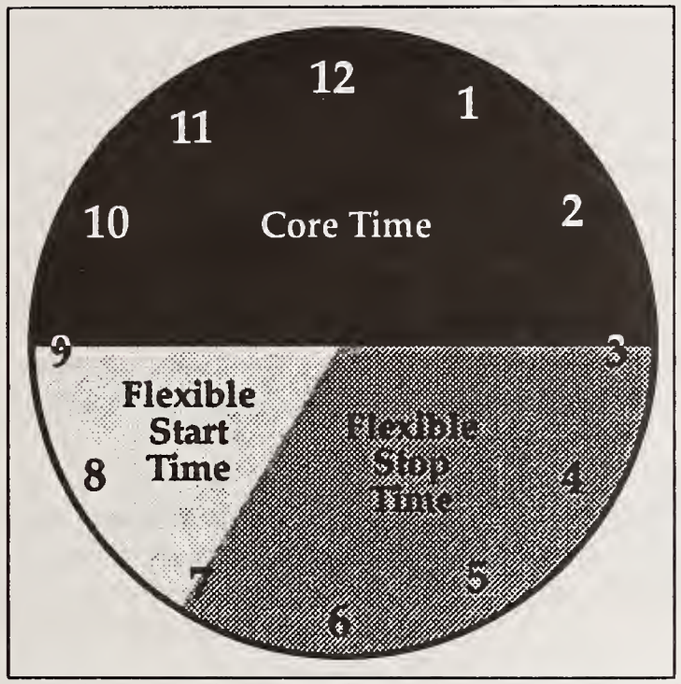
Three types of alternative work hours can be used to reduce peak hour trip making: *flex-time* which allows employees to choose their own working hours within a range of hours; the *compressed work week* which allows employees to work 40 hours in less than five days (e.g. four 10-hour days); and *staggered work hours/shifts* for which the employer sets different shifts for employees, usually without employee input.

Cost Examples:

Alternative work hours can add to security and utility costs, but may save money by making better use of parking, equipment and other facilities since employees

Sample Costs of Transportation Management Programs, continued

are not all onsite at the same hours. Leave and overtime costs can also be reduced if employees can set their own schedules.



Flex time allows employees to choose their own working hours within a range of hours.

Strategy Example 4: Subsidized Transit Passes

In many areas, developers are required to provide one- to three-month free transit passes to the employees at new commercial developments or the residents of new residential developments. Some developers choose to provide transit passes or pay vanpool costs voluntarily to reduce auto traffic at their sites or cut the costs of providing parking stalls.

Cost Examples:

- The federal government currently allows an employer to provide an employee up to a $15 transit subsidy per month.
- Many employers have set up monthly payroll deduction plans to pay for annual or quarterly transit passes (transit passes cost less than daily fares).
- Employers have set up in-house transit pass outlets for their employees.
- Employers pay 100% of transit pass costs as a company benefit instead of paying for parking fees.

Strategy Example 5: Provision of Bus Stop Elements

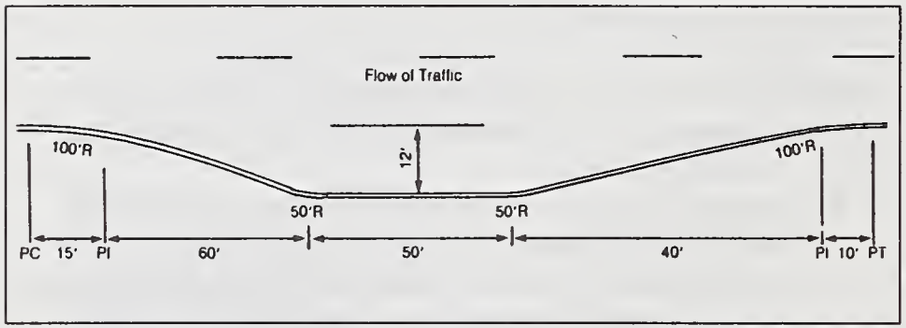
In partnership with the local transit operator, bus stops can be constructed at employment, residential, retail sites and other developments for a variety of costs, depending on the nature of the stop. Three bus stop elements are provided as examples.

Bus stop landing pads are asphalt or concrete paving which passengers step onto as they board or alight from buses. **Bus shelter footings** are the concrete bases supporting bus shelters. **Bus pullouts** are the paved shoulder of a road where buses can safely stop for passengers.

Cost Examples:

- Bus stop landing pad = $500 - $1,000 (depending on whether asphalt or concrete is used)

Sample Costs of Transportation Management Programs, continued



One bus pullout

Source: Bus Facilities: Design Guidelines, Orange County Transit District

- Bus shelter footing = $2,000
  (excavation, forming & pouring)

- Bus pullouts = $10,000 - $20,000
  (very site specific; costs will reflect drainage, curb and gutter, and wheelchair ramp requirements)

Transportation Management Ordinances

The subject of transportation management ordinances has been discussed in this area for several years. After two years of study, METRO and the Puget Sound Council of Governments proposed a model ordinance for King County in 1986. That same year a TSM Subcommittee of the Snohomish County Subregional Council was formed to explore the model's usefulness in this county. Transportation management concepts were very new in 1986 and the proposed model was not adopted by any of the jurisdictions at that time. Since then, a number of communities in King County have adopted TSM ordinances or regulations that effectively mandate certain TSM programs such as special parking ordinances to promote ridesharing.

There is general agreement that transportation management ordinances should contain:

- **Goals** that set out desired reductions in vehicle trips during specified periods such as the peak hour; the goals may be defined by geographic subarea (downtown vs. balance of the community) or by time periods (by 1992, by 1995).

- **Land Uses and Program Requirements** that define what transportation management programs are required for what scale of and type of development (e.g. "Employers with 100+ employees must prepare a TSM Plan").

- **Incentives** may be included, although they are often not part of these ordinances. In return for specific transportation management program commitments (usually costly ones), the jurisdiction provides some form of zoning variance. (e.g. "Parking requirement reductions of up to 15%;" reductions in impact fees.)

- **Monitoring** requirements for the jurisdiction and/or the developer are defined. (e.g. "Annual employee surveys shall be submitted to the city by employers;" "the city will conduct employee surveys.")

- **Enforcement** provisions may be included and may cover the levying of fines for noncompliance ("failure to implement plan provisions fine is $250 per day") as well as milestones for special efforts requirements (e.g. "The city will enforce ordinance if employer does not achieve trip reduction goals within X months after the development is 75% occupied").

- **Administration** of the ordinance must be spelled out. Usually the responsible entity within the jurisdiction is named (the Assistant City Manager, the City TSM Coordinator, the County TSM Task Force).

Beginning on the next page are examples of transportation management provisions from various jurisdictions.

Selected Transportation Management Provisions

The following are examples of transportation management materials used in other areas.

City of Pleasanton, California

Transportation Systems Management
Employer's Requirements
(Pursuant to Ordinance No. 1154)

The City of Pleasanton is committed to maintaining the community as an attractive and convenient place to live, work, visit and do business. To that end, a Transportation Systems Management (TSM) Ordinance was adopted on October 2, 1984. It calls for employers, complexes and the City to work together in reducing traffic trips on City streets.

Under the TSM Ordinance, the following requirements are made of employers with a permanent place of business within Pleasanton. Requirements one (1) through five (5) are to be prepared and submitted to the City Transportation Coordinator by January 2, 1985. Future employers are to submit and begin implementation within two months following issuance of a Zoning Certificate, if required, or within two months following the date the employer opens for business. New complexes shall have four months following initial occupancy in which to comply.

Employer's Requirements

	Complexes*	Located within a Complex	Less Than 9 Employees	10 to 49 Employees on a Single Shift	50 to 99 Employees on a Single Shift	100 or More Employees on a Single Shift
1. Transportation Survey	X	X	X	X	X	X
2. Information Program	X	X		X	X	X
3. TSM Program	X	X			X	X
4. Appoint Transportation Coordinator	X	X			X	X
5. Include TSM Requirements in CC & R's and/or Lease	X					
6. Annual Report	X	X			X	X
7. Participate on Task Force	X					X

* Complex is defined as any multi-tenant building or group of buildings with fifty (50) or more employees at the single site OR any business park, shopping center, or other commercial/industrial project of 15 acres or more which is defined by two or more of the following characteristics: known by a common name; governed by a common set of CC & R's; approved as an entity by the City; covered by a single tentative or final sub-division map.

Selected Transportation Management Provisions, continued

Transportation Survey

An annual survey will be conducted by the City through all employers to establish employee commute pattern data and to provide carpool and vanpool matching information. The survey is to be distributed with the City's Business License Tax Form and/or by direct mail. Employers are to make copies of the survey and distribute them to all employees. When completed, they should be returned to the City by June 30 of each year.

Information Program

Employers are to establish methods for disseminating to all employees informational materials regarding transit, ridesharing and other commute alternatives. The materials may be provided by the City Transportation Coordinator and/or the employer. The City Transportation Coordinator has a form available to assist in putting together an appropriate information program.

TSM Program

The TSM Program is to be designed and provided to the City Transportation Coordinator to help achieve reductions in traffic generated by employees during peak travel periods (7:30 a.m. to 8:30 a.m. and 4:30 p.m. to 5:30 p.m.). These programs will assist in achieving, over a four year period, a forty-five percent (45%) reduction in the number of vehicle trips that would occur during the peak periods if the commute trips of all employees were made by single-occupancy vehicle trips.

The TSM Program shall include any reasonable combination of measures which may include, but not be limited to, the promotion and marketing of carpools, vanpools, bicycles, transit-related programs, and alternative work hour programs.

A TSM Program form is available for designing an appropriate program. Please contact the City Transportation Coordinator for the forms and assistance in putting a program together.

In addition, complexes shall include a program for coordinating, monitoring and assisting with the TSM Programs of employers within the complex.

Appoint a Transportation Coordinator

Employers of less than 50 employees but located within a complex may appoint the complex's coordinator to be responsible for developing and implementing the TSM Program.

Employers with 50 or more employees shall appoint a coordinator who shall be responsible for primary implementation of the TSM Program.

Every complex shall have a coordinator who shall:

- Be responsible for primary implementation of the TSM Program;
- Serve as liaison to the City Transportation Coordinator, the TSM Task Force, and coordinators in the complex;
- Participate in any regional activities required by the City Transportation Coordinator;
- Be responsible for developing and implementing the TSM Programs for employers of less than 50 employees located within the complex, if so requested by the employer.

Selected Transportation Management Provisions, continued

Include TSM Requirements in CC & R's and/or Lease

Every complex owner, property owner's association, landlord, and/or manager shall include reference to, and participation in, the requirements of the TSM Ordinance in the recorded Conditions, Covenants, and Restrictions (CC & R's) and in every lease.

Annual Report

Each employer having 50 or more employees, or which is located in a complex, and each complex doing business in the City on June 30 shall provide the City Transportation Coordinator with an annual progress report. The annual report will be due August 1 and shall cover the immediately preceding July 1 to June 30 period, or the portion of the period the employer/complex was in business.

The annual report shall describe the TSM Program and results achieved during the reporting period, and the TSM Program intended for the ensuing year. An annual report form is available from the City Transportation Coordinator.

TSM Task Force

The TSM Task Force shall be responsible for the coordination and implementation of the citywide TSM effort, in accordance with the goals of the TSM Ordinance.

The Task Force shall be comprised of the following members:

- a representative from each complex who occupies an executive and/or management level position, or similar position within the complex, and who has authority to act relative to the mandated duties of the TSM Task Force;
- a representative from each employer of one hundred (100) or more employees on a single shift who occupies an executive and/or management level position, or a similar position within the organization, and who has authority to act relative to the mandated duties of the TSM Task Force;
- the Downtown Merchant's Association Coordinator; and,
- a representative from each transit authority and ride-sharing agency serving Pleasanton.

The TSM Task Force shall hold regularly scheduled meetings in Pleasanton.

Selected Transportation Management Provisions, continued

City of Hartford, Connecticut

(September 26, 1983)

Ordinance Amending Section 35-6 of the Municipal Code Concerning Transportation Management Plan

Be It Ordained by the Court of Common Council of the City of Hartford:

That Section 35-6 of the Municipal Code of the City of Hartford concerning off street parking and off street loading provisions is hereby amended by adding Subsection 35-6.21, concerning a Transportation Management Plan, to read as follows:

35-6.21 Transportation Management Plan. All applications for site plan approval and/or a special permit for developments in the B-1 Downtown Development District shall include a preliminary and final transportation management plan. The purpose of the transportation management plan is to clearly indicate access to and from the site; pedestrian and vehicular circulation and parking; the impact of the proposed access, circulation and parking on the City's pedestrian and vehicular circulation system; and conformity to the Downtown Development Plan.

Preliminary Transportation Management Plan

A preliminary transportation management plan shall include, at a minimum, written estimates of the following information:

A. The number of on-site parking spaces required by the provisions of Section 35-6.17.

B. The number and types of parking spaces to be provided on-site such as: employee parking, transient parking for on-site uses, transient parking for off-site uses, parking for high occupancy vehicles, parking for compact cars and handicapped parking.

C. The number, location and type of any parking spaces to be provided off-site and the method of transporting persons between the off-site facility and the project site.

D. Alternative modes of transportation such as mass transit, carpools, vanpools, and bus pools available and to be provided.

E. Expected usage of the alternative modes of transportation.

F. Location of all vehicular and pedestrian entrances and exits.

Final Transportation Management Plan

A final transportation management plan shall include, at a minimum, a written statement with appropriate supporting documentation, describing the following information:

A. The number of on-site parking spaces required by the provisions of Section 35-6.17.

B. The number and types of parking spaces to be provided on-site such as: employee parking, transient parking for on-site uses, transient parking for off-site uses, parking for high occupancy vehicles, parking for compact cars and handicapped parking.

Selected Transportation Management Provisions, continued

C. The number, location and type of any parking spaces to be provided off-site and the method of transporting persons between the off-site facility and the project site.

D. Alternative modes of transportation such as mass transit, carpools, vanpools, and bus pools available and to be provided.

E. Expected usage of the alternative modes of transportation.

F. Location of all vehicular and pedestrian entrances and exits.

G. The impact of the proposed development on the City's vehicular and circulation system including the numerical impact on a.m. and p.m. peak hour volumes and peak hour link and intersection capacities for all streets and intersections within three (3) blocks of the project site.

H. How the proposed access and pedestrian and vehicular circulation and parking conform to and implement the recommendations of the transportation and circulation elements of the Downtown Development Plan.

Reduction in required number of on-site parking spaces.

The Court of Common Council is authorized to allow the reduction of the on-site, off-street parking spaces required in the B-1 Downtown Development District in accordance with the provisions of this section in instances where the reduction is in accord with an approved transportation management plan and will reduce traffic and congestion on city streets; where alternative modes of transportation are provided to get to and from the site; and where the reduction of the on-site parking is in conformance with the Downtown Development Plan and will provide for a more appropriate form of development:

A. Up to a ten percent (10%) reduction in the number of required non-transient off-street parking spaces is permitted when the applicant and/or employers who are tenants of the applicant's project agree to the following:

1. Designation of an employee transportation coordinator responsible for promoting ridesharing and public transit use among employees.

2. Participate in area-wide ridematching system or provide a ridematching program at the site.

3. Designate a minimum of twenty percent (20%) of the non-transient off-street parking spaces to be offered at a discount parking rate for vehicles containing three (3) or more persons. If there is to be no charge for parking, then reserve a minimum of twenty percent (20%) of the non-transient off-street parking spaces for vehicles with three (3) or more persons. The reserved preferential spaces shall be located in close proximity to the building entrances, relative to other spaces, and shall be clearly signed or marked "RESERVED-MINIMUM THREE PERSONS PER VEHICLE."

Selected Transportation Management Provisions, continued

B. Up to a thirty percent (30%) reduction in the number of required non-transient off-street parking spaces is permitted when the applicant submits a transportation management plan demonstrating a comprehensive approach to reducing the parking demand at the site. The reduction granted shall be commensurate with the parking demand reduction projected by the transportation management plan. The plan will be reviewed by the City Manager to determine the adequacy in reducing parking demand through increased ridesharing and applicant and/or employer commitment to the program. Reductions shall be computed based on levels of auto occupancy and transit ridership determined by the City Manager to be applicable to the area in which the site is located.

In addition to the techniques required in Section 35-6.21 (3) (a), a minimum of three (3) of the following techniques shall be provided to qualify as an acceptable comprehensive transportation management plan for the purposes of parking space reduction:

1. Provisions of vanpools or subscription bus service for employees.

2. Subsidy of employee use of high occupancy vehicles such as carpools, vanpools, and bus pools.

3. Instituting a parking charge and not permitting such charge to be employer-subsidized.

4. Provision of parking cost subsidies for high occupancy vehicles, if a parking charge exists.

5. Provision of, or participation in, shuttle services from off-site parking facilities owned or leased by the applicant or employers who are tenants of the applicant's project.

6. Provision of subsidized transit passes.

7. Any other technique or combination of techniques acceptable to the City Manager and capable of reducing non-transient parking demand at the work site.

C. A reduction of one (1) required on-site non-transient parking space may be permitted for each non-transient parking space provided in an off-site parking facility in accordance with the following conditions:

1. The facility must be owned or leased by the applicant or employer tenants of the applicant's project.

2. Regular shuttle service between the off-site facility and the project site must be provided by the applicant or employers who are tenants of the applicant's project.

3. The off-site facility must be located in conformity with the Downtown Development Plan.

4. The off-site facility must be developed in accordance with all other applicable provisions of Section 35-6 of the Municipal Code.

Selected Transportation Management Provisions, continued

Transportation management, continuing character of obligation.

Where a final transportation management plan is approved by the council, the applicant shall covenant to ensure continued compliance with the final transportation management plan. The covenant shall be for a term of twenty (20) years unless the council specifically finds that another period of time would be in accordance with the purposes set forth in section 35-6.21. Such covenant shall be recorded on the land records and shall run with the land.

Selected Transportation Management Provisions, continued

Community Transit's Employer Services

A Full Range of Services and Programs

Community Transit, Snohomish County's public transit system, is more than simply buses. We have ideas and services that can help your company deal with the ever increasing traffic congestion and growth that is affecting our whole region. Whether your company is in Snohomish County, plans to re-locate here, or your company has employees living or working in Snohomish County, Community Transit's Employer Services can help you.

Ridematching

Community Transit's commuter ridematch program enables your employees to find other commuters who want to share the ride and save money by carpooling or vanpooling. Commuters are matched by origin, destination and work schedules. The service is free and information is mailed out within 48 hours. During 1990 CT, along with 2 other transit systems, will link up with computerized ridematching services and will be able to provide commuters with a region wide matching service.

Vanpool Program

Community Transit has 15-passenger vans available. Vans are owned and maintained by CT. A flat monthly fare is charged to a vanpool group to cover gas, insurance and maintenance costs. The fare is based on the number of passengers in the van and the round trip mileage. A member of the group volunteers to drive and rides for free. Vanpooling is an option for employees who have longer commutes and live in areas not served by regular fixed-route transit. During 1990, Community Transit plans to double the size of its vanpool fleet.

ETC Program

Your company designates an employee to be Community Transit's primary contact. This person is usually in personnel or facilities management. We refer to your staff designee as the Employee Transportation Coordinator (ETC) and we regularly communicate transportation information pertinent to your employees. Your ETC will occasionally be requested to post or distribute information. The ETC program is a communication network that allows CT to efficiently reach our region's 500,000 daily commuters.

Pass Subsidy Program

Community Transit employer pass subsidy program provides you with a way to subsidize all or a portion of your employees' transit or vanpool fare. Your subsidy is a low-cost benefit for employees, a tax deductible business expense and an easy way for you to enourage your employees to ride the bus or vanpool.

Parking Management Consultant

Working with your facility or personnel manager, Community Transit parking management consultations are available at no charge. If your company is experiencing parking problems and needs ideas for solving them, CT can assist you with identifying ways that can help your employees make the best out of a tight situation.

Customized Transit Service

Community Transit has 44 routes serving Snohomish County. Personalized route planning however, is available for your employees and custom bus routes can be designed to meet special ridership needs. Working with private bus companies, CT can assist your company with developing a "bus pool" program for that daily commute.

Flex-Time Consultation

Community Transit can assist you in developing flex-time policies for your company. Flex-time helps alleviate traffic congestion by allowing employees to travel at less congested times. It has also proven to increase productivity and morale, as well as expand the number of hours your company is open to serve your clientele.

Chapter 7: Public Transportation – Compatible Residential Subdivision Design

- ❑ *What Makes a Residential Subdivision Public Transportation Compatible?*
- ❑ *Alternative Public Transportation Services in Suburban Areas*
- ❑ *Concepts for New Suburban Development*

Introduction

> *We are still building WWII suburbs as if families were large and had only one breadwinner, as if all the jobs were downtown, as if land and energy were endless, and as if another lane on the freeway would end traffic.*
>
> *The Pedestrian Pocket Book*

The effectiveness of public transportation in the suburbs depends to a large extent upon the location, density and the design of residential subdivisions.

While we are beginning to recognize changes to our suburban land patterns, we continue to design subdivisions and road improvements that assume that the automobile is the only mobility option. As a result, suburban residential areas are difficult for public transportation to serve. There are two primary reasons. First, houses at low densities result in a low demand for bus service. This issue was discussed in Chapter 3, "Public Transportation-Compatible Land Uses."

The second reason is that, generally, most subdivisions are not designed to accommodate buses, or people walking to and from bus stops. This chapter addresses design and other issues relating to the creation of public transportation-compatible subdivisions.

The term "**public transportation**" applies to a wide variety of transportation services available to the public including buses, ferries, van/carpooling, park-and-ride facilities, and rail service. In this chapter, bus and rideshare services will be the major focus.

The term "**subdivision**" refers to a type of residential development comprised of houses or multi-family structures on individual lots fronting on public streets. A subdivision generally contains lots of a similar size and structures of uniform size and style. Subdivisions can vary in size from small ones with only five lots to those with many hundreds of lots.

The term "**short plat**" refers to a small subdivision of four lots or less which by state law does not require the same level of local review as subdivisions.

The term "**principal and minor arterial streets**" refers to major streets designed to move large volumes of traffic through an urban or suburban area.

The term "**collector arterial streets**" refers to streets designed to filter traffic from local streets to the principal and minor arterial streets.

The term "**local streets**" refers to streets designed to provide vehicular and pedestrian access to abutting properties. The second function is to move low volumes of traffic onto the collector arterial streets.

Introduction, continued

Developers can also derive benefits by integrating public transportation into their subdivision projects.

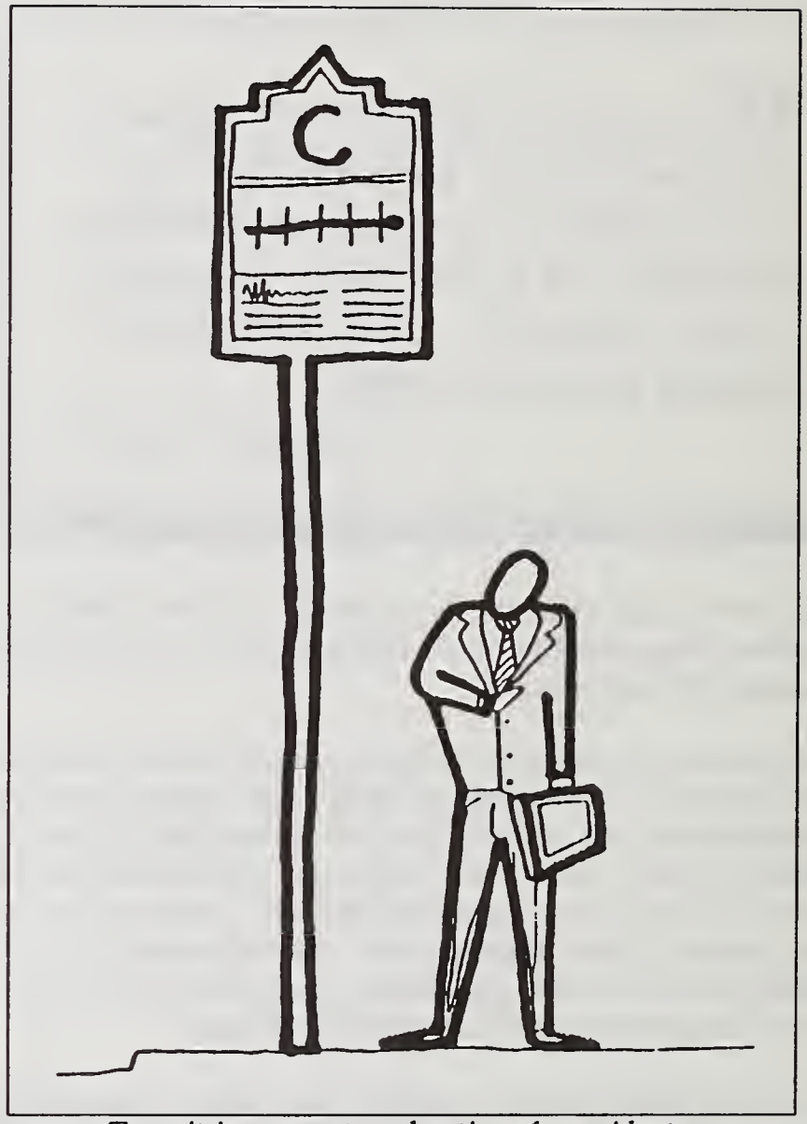
The Benefits of Public Transportation – Compatible Subdivisions

Residential subdivisions, compatible with public transportation, can offer many positive points to their residents such as:

- Reduced reliance on the automobile, reducing auto congestion.
- Creation of a pedestrian environment.
- Provision of real transportation choices.
- Reduced energy consumption.

Developers can also derive benefits by integrating public transportation into their subdivision projects. Well designed bus or ridesharing facilities integrated into subdivisions can:

- Mitigate traffic impacts.
- Mitigate SEPA requirements.
- Create a competitive edge.
- Attract potential home buyers' attention.
- Create a better community image.



Transit improves travel options for residents.
Source: Market Based Transit Facility Design, Harvey Z. Rabinowitz, et al., (February, 1989)

What Makes a Residential Subdivision Public Transportation–Compatible?

> *Design features that create public transportation compatibility can be easily accommodated into most subdivisions.*

Design features that create public transportation compatibility can be easily accommodated into most residential subdivisions if they are included at the earliest stages in the design process and if the public transportation operator is a partner in that process.

Developers need to work closely with the local transit operator as they consider ways to bring bus service to, or as bus facilities are planned for, their developments.

The following design criteria are important to creating residential subdivisions conducive to public transportation ridership and to pedestrian accessibility, each of which builds upon the other and can produce an environment for effective public transportation use:

1. Locational Criteria
2. Size of Development Consideration
3. Vehicular Access and Circulation Criteria
4. Pedestrian Access Criteria

1 Locational Criteria

When a developer is exploring how public transportation might work at a proposed development, an initial consideration is the location of the residential development relative to existing or planned public transportation services and activity centers. The following criteria need to be considered:

Locate residential developments in areas currently served (or that are planned to be served) by public transportation.

- Residential developments need to be situated in areas with bus service or in areas which the transit operator indicates will or can be served in the future.
- Public transportation facilities that can benefit residents in subdivisions include bus stops, transit centers (transfer centers), park-and-ride lots and passenger drop-off points for vanpool and carpool users.

Locate residential developments adjacent to neighborhood activity centers.

- Compatible neighborhood activity centers, such as schools, convenience shopping and recreation centers within close proximity to residences can reduce the need to use private autos for many trips.
- Neighboring activities can have a major impact on the demand for public transportation which, in turn, can increase levels of service or bring new services to an area.

What Makes a Residential Subdivision Public Transportation–Compatible?

2 Size of Development Considerations

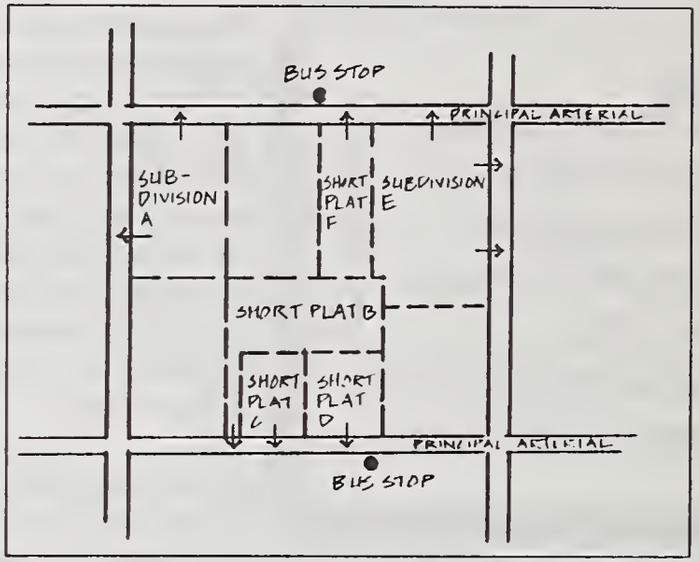
Small developments such as short plats account for over 50% of the residential development in Snohomish County. The size of a subdivision is another consideration in assessing public transportation compatibility and the possibility of bus service. The local jurisdiction, working with developers and the transit operators, should consider the following:

Coordinate the design of small subdivisions and short plats to allow residents access to bus service.

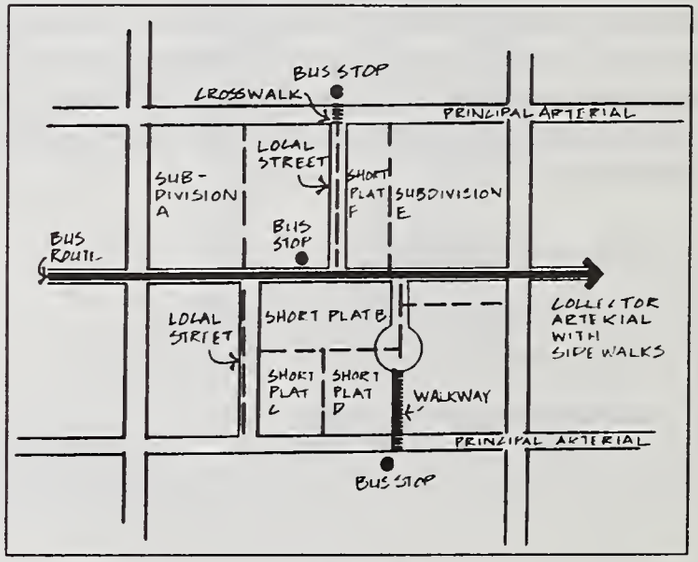
- Coordinate overall planning for roads and pedestrian facilities in areas likely to have multiple short plats and small subdivisions to allow residents access to current or future bus service.
- Work with the local transit operator to locate bus routes and facilities in such areas.

Consider several small residential developments together as if they were a single, larger subdivision, for the purposes of planning bus service access and related facilities.

- Individual, small, residential subdivisions generally do not generate sufficient rider demand for bus service.
- Several small developments can have the impact of a large development and thus may generate sufficient ridership demand for bus service.



Undesirable
Uncoordinated development, poor bus access.



Desirable
Development with bus and pedestrian access.

What Makes a Residential Subdivision Public Transportation–Compatible? continued

The number of lots alone does not dictate compatibility. The lot size in single-family developments is crucial in determining whether sufficient density exists to generate ridership for standard bus services (a range of 4-7 units/acre is the minimum) if all other conditions are correct. At less than four to seven units/acre, vanpools and carpools may be the best service option. For more information on densities, see Chapter 3.

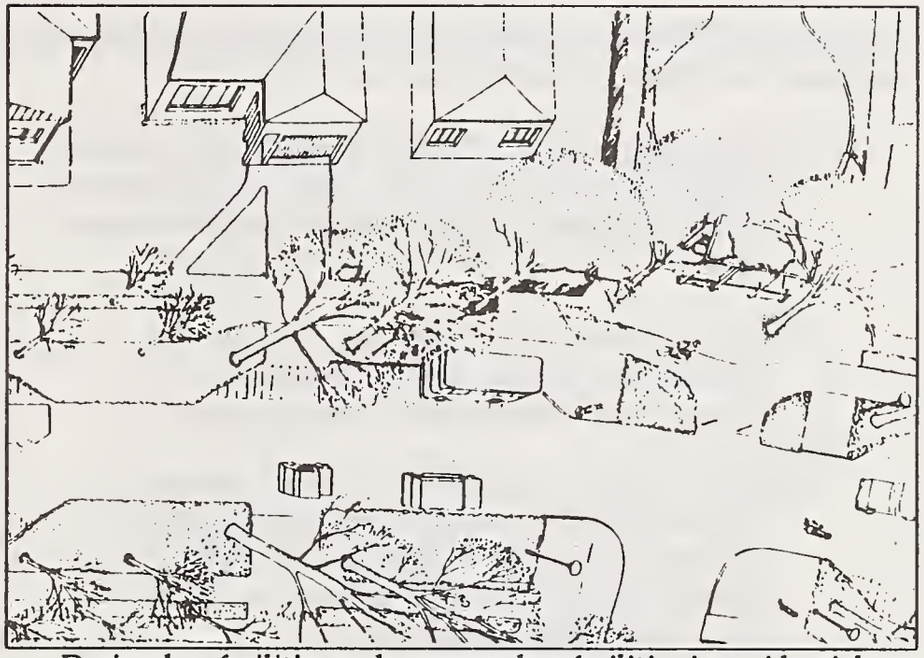
3 Vehicular Access and Circulation Criteria

Access and circulation are critical. Even if subdivisions are located within a bus service area, residents may be without bus service if subdivisions are not designed to be bus accessible.

For residents of a subdivision to have bus service, most of the following criteria must be met:

Maximize bus service and pedestrian access at the site.

- Bus facilities must be included in the initial design or redesign of the arterial roads abutting a subdivision.
- Arterial streets adjacent to the subdivision must have safe sidewalks and, if appropriate, bus shelters.
- Physical barriers such as perimeter walls, berms, landscaping and slopes between the residences in a subdivision and bus stops must be avoided.



Design bus facilities and access to bus facilities in residential subdivisions.

- Provide walkways, linking various sections of the subdivision to peripheral arterials, especially those with bus stops.
- Security measures incorporated into the development need not preclude this bus access. For example, gates may be provided at access points to a subdivision. Also, another security consideration, lighting, is very important and needs to be included in the design of walkways.

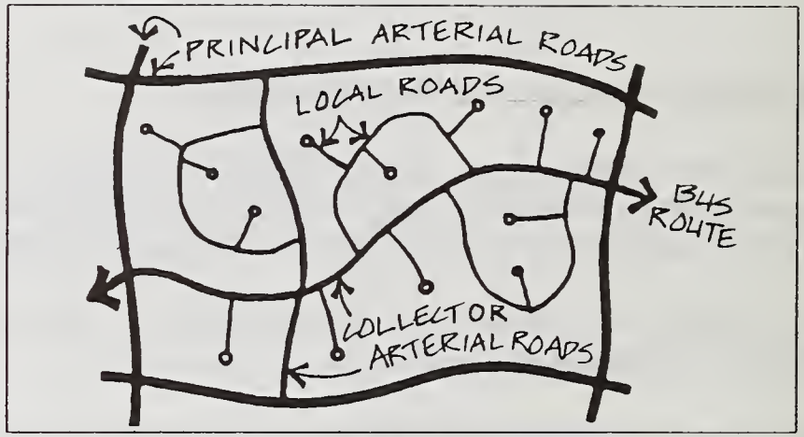
What Makes a Residential Subdivision Public Transportation–Compatible? continued

Accommodate public transportation vehicles on key road networks within large subdivisions.

- Principal, minor and collector arterial streets that will be used by buses must be designed and built to accommodate heavyweight and large vehicle requirements.
  - Street design must take into account the provision of bus services in road pavement strength and the design of intersections.
  - Buses cannot operate on cul-de-sacs or on narrow, winding streets. Buses cannot back up, so turning room needs to be provided or routes designed so that buses can safely move through an area.
- Bus facilities, approved by the local transit operator, must be designed into arterial streets.
  - Provide curbs and sidewalks for pedestrians.
  - Provide bus pullouts based on the transit agency guidelines.
  - Provide bus stops at major boarding points with covered waiting areas, benches and landscaping. Protect riders from the weather and buffer them from the abutting streets.
  - Work with the transit operator and other appropriate entities to site park-and-ride lots convenient to subdivisions.

Provide efficient circulation patterns for buses within large subdivisions

- Establish a street hierarchy within subdivisions of local, collector arterial, principal and minor arterial streets.



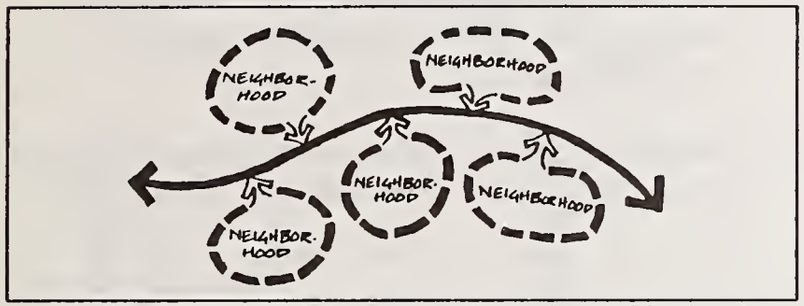
Street hierarchy

Source: Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas, Transportation Research Board

- Principal arterials are usually spaced every mile and bisected by minor or collector arterial streets. By operating buses along the arterial collector streets, most residents are brought into easy walking distance of a bus stop.

What Makes a Residential Subdivision Public Transportation–Compatible? continued

- Provide collector arterial streets through subdivisions for transit circulation between neighborhoods.

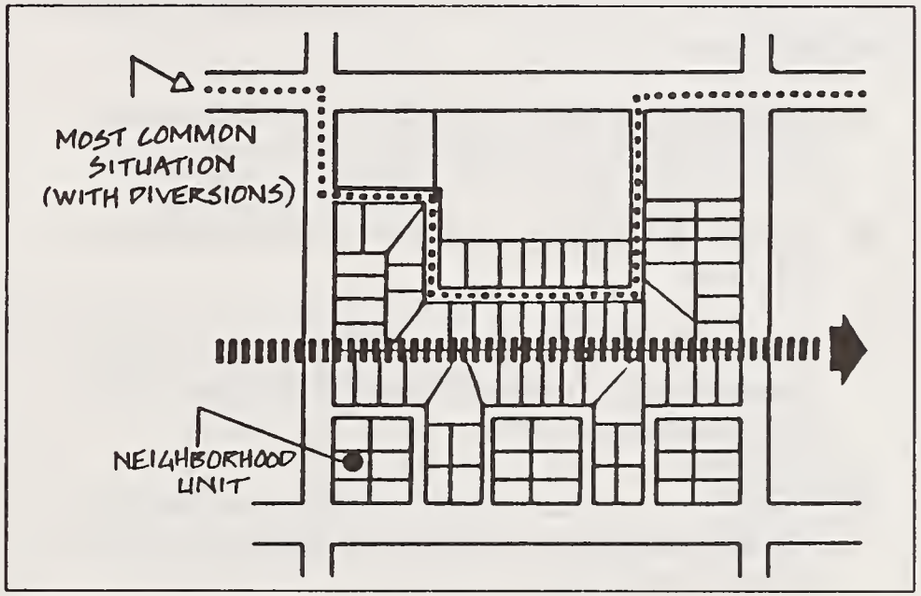


Collector road with bus route through neighborhood

  - These streets, over time, may become popular pedestrian routes as they traverse a neighborhood.
  - These streets warrant specific attention for effective and interesting landscaped pathways.

Design internal subdivision streets to provide access to bus service.

- Sidewalks with buffers on principal, minor and collector arterial streets are necessary for transit access.
- Direct, efficient routes through subdivisions are needed to assure that bus service is attractive to potential users.
  - Circuitous street patterns not only physically increase walking distance but distort the perception of walking distance as well. Perceived distance is as critical as actual walking distance in the design of pedestrian access.
  - Bus patrons need to see that buses have convenient and direct routes through residential areas. If buses wander on long, twisting routes, travel times will discourage use.



Desired transit routing

Source: Guidelines for Public Transit in Small Communities, Small Community Systems Branch, Urban Transit Authority of British Columbia, (September, 1980).

Develop bike facilities within subdivisions and to nearby stores, schools, parks, shops and public transportation facilities.

- Provide bicycle facilities linking community facilities including bus stops. Separate bicycle lanes and paths from bus stops and pedestrian walkways.

What Makes a Residential Subdivision Public Transportation–Compatible? continued

- Secure bicycle racks and storage facilities should be considered for community centers, transit centers, park-and-ride lots, schools, shopping centers and similar destinations.

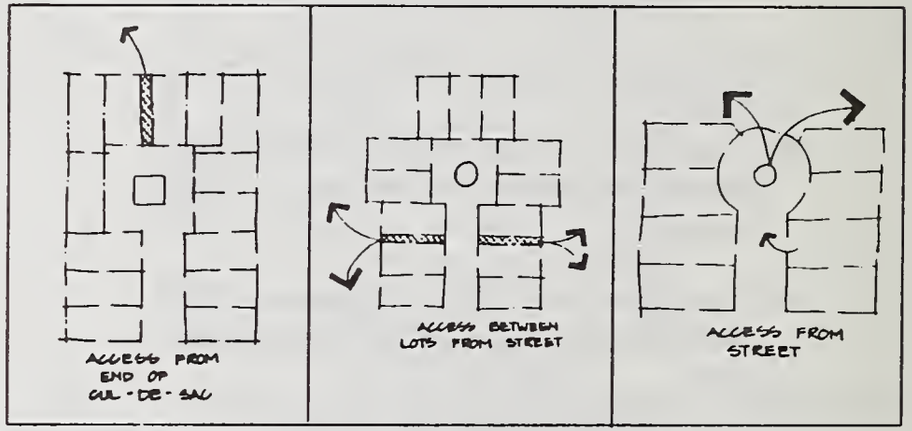
4 Pedestrian Access Criteria

Equal consideration must be given to pedestrian mobility in subdivisions.

- Provide sidewalks along streets and walkways through other areas such as schools, parks, or open spaces.
- Provide convenient pedestrian access to streets with bus stops.
- Keep options open for pedestrian connections between residences and abutting activity centers, schools, parks, and similar uses.
- Dedicate the rights-of-way for walkways that serve public transportation facilities such as transit centers and bus stops.

Reduce the walking distances between the residences and bus stops.

- Pedestrian routes need to be designed to realistically reflect average walking distances to transit facilities.
  - Average walking distance is approximately 750 feet (.14 mile). Beyond this distance, the percentage of passengers who will walk to a transit facility falls off rapidly, although the actual distance is dependent on the type of service offered (light rail, regular bus, etc.) and the characteristics of the walking environment (paved walkways, safe and interesting areas).
- Provide shortcuts which permit access through midblocks to increase flexibility for foot travelers.

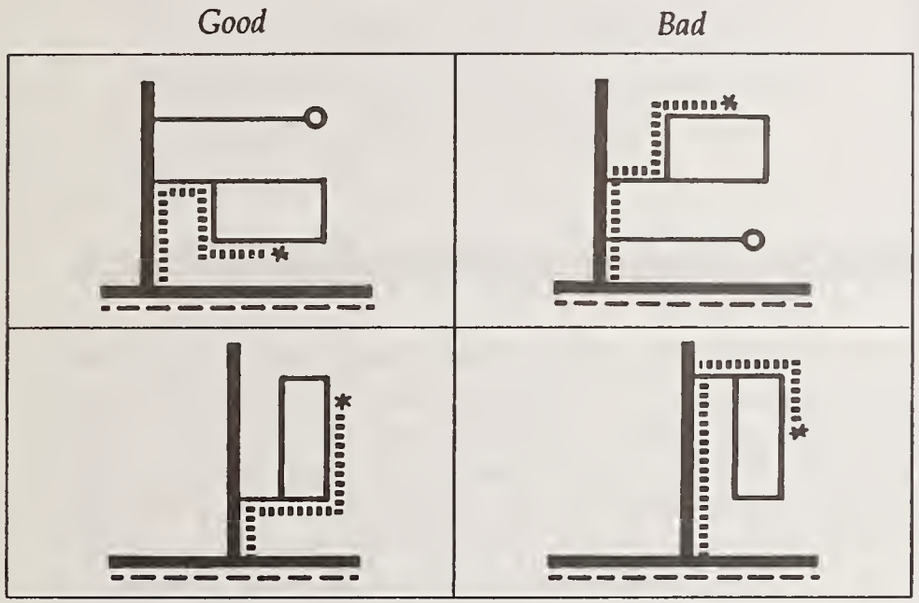


Walkways can reduce walking distances

Source: Site Planning for Cluster Housing, Richard Untermann, (New York, 1977)

What Makes a Residential Subdivision Public Transportation–Compatible? continued

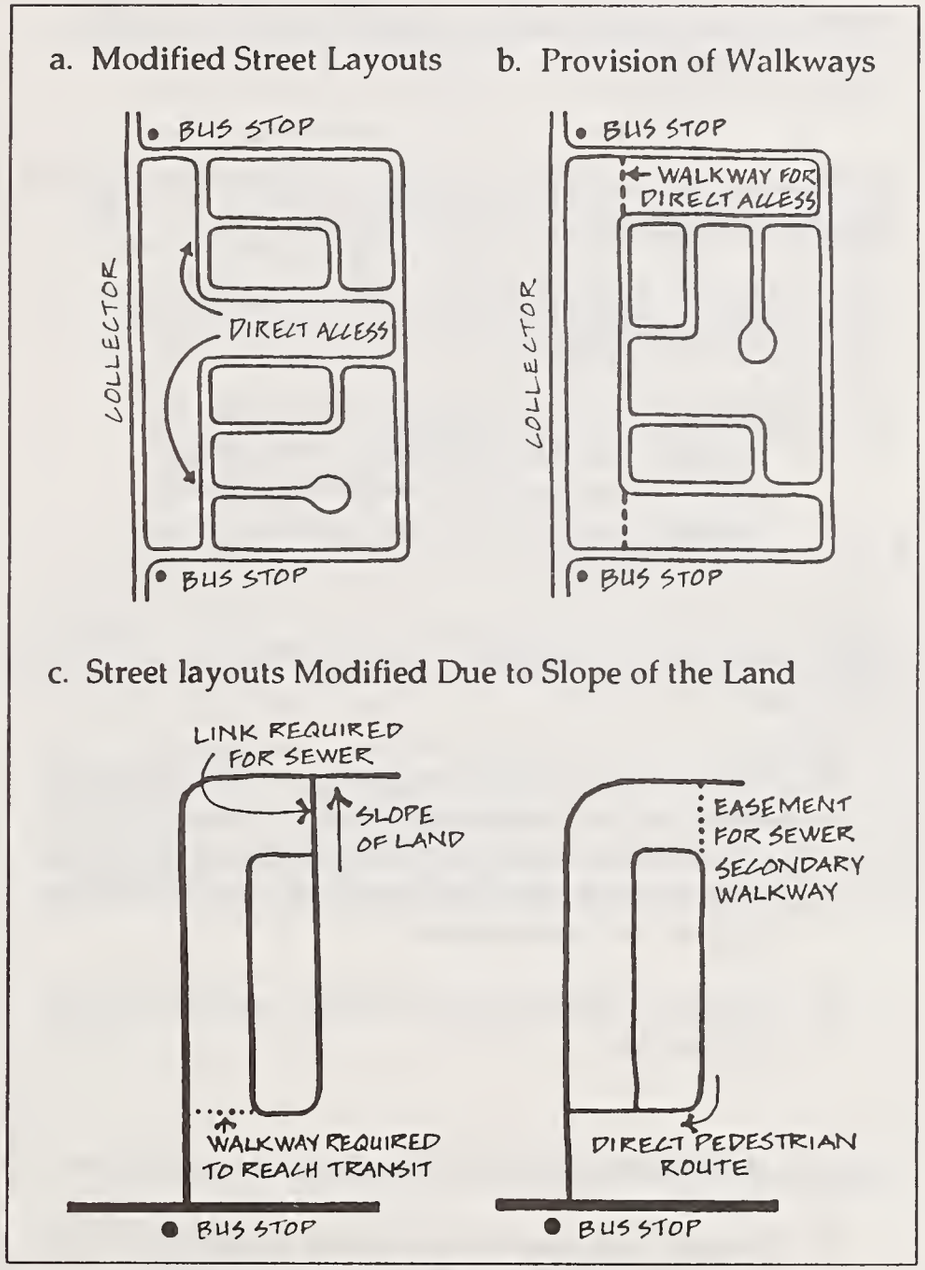
- Minor alterations in the subdivision layout and careful inclusion of well designed walkways can reduce both perceived and actual walking distances.



Minor alterations in subdivisions improve walking distances.
Source: Guidelines for Public Transit in Small Communities, Small Community Systems Branch, Urban Transit Authority of British Columbia, (September, 1980)

Pedestrian walkways need to be designed to safe standards governing walkways.

- Pave all sidewalks and walkways. Paving materials need to be safe under wet weather conditions.
- Design pedestrian walkways to be direct and minimize unnecessary meandering.
- Extend walkways to permit bus passengers to avoid mud, landscaping, berms, and parking lots.



Source: Subdivision Design Guidelines to Facilitate Transit Services, Ottawa: Ministry of State for Urban Affairs, (March , 1979).
Canadian Urban Transit at a Glance , Ottawa: Canada Mortgage and Housing Corp., (June, 1981).

What Makes a Residential Subdivision Public Transportation–Compatible? continued

- Use street signs to mark public walkways within a subdivision.

Walkways must meet all state and local barrier-free design standards to facilitate use by all people.

- Barrier-free design for walkways provides good bus access for all people.
  - Each community has adopted barrier-free design standards to assure that developments are accessible to, and safe for use by, people who have disabilities that impair their mobility.

Scale the size of facilities to correspond to pedestrian volumes.

- Provide an eight-foot minimum width sidewalk adjacent to bus stops and increase the width if the number of users warrants additional circulation space. Adequate space for loading wheelchairs onto buses is part of this requirement.
- Elsewhere, the minimum width of a walkway needs to be six feet.

Maintain all sidewalks and walkways in good repair.

- Develop maintenance agreements to ensure that all pedestrian facilities are properly maintained.

See Chapter 8, "Public Transportation — Compatible Site Design" for more information on walkways.

Alternative Public Transportation Services in Suburban Areas

The local transit agency can help developers explore the feasibility of encouraging use of these alternative services at new or existing developments.

Traditional public transportation service provided to the suburbs has been fixed-route bus service. However, there may be other modes of public transportation which may serve these areas more efficiently than buses. Because of low densities or subdivision and road design, the following services may provide transportation opportunities to areas that could not reasonably be served by conventional bus services:

- **Park-and-Ride Facilities** are facilities provided for public transportation users who drive and park their autos or cycles and transfer to a bus or rail vehicle to complete their trip. These sites need to be located adjacent to, and have easy access to, major arterials or highways. They can be designed for exclusive transit use or they can share unused portions of parking lots at shopping centers, movie theaters, churches, or similar facilities. They can even be included at entrances to very large-scale developments as additional "marketing" for the convenience of the commuter in the subdivision.

- **Carpools and Vanpools** are used by groups of people who share the use and cost of a van or auto for transportation to and from a destination on a regular basis, usually between home and work.

- **Subscription Bus** is bus service for which routes and schedules are prearranged to meet the travel needs of specific groups of riders such as workers at a single destination like a major employment center. The level of service is generally higher than that of regular bus service, and service is obtained by contractual arrangement. Passenger fares generally cover all operating costs.

These services may also provide opportunities for developers to mitigate the traffic impacts of their developments. Participation in these services, may not require any additional facilities; for example, bus pullouts and shelters can be used as collection points for carpools, vanpools and subscription buses. Also, the cost of participating in these services may be traded for not having to accomplish other requirements. The local transit agency can help developers explore the feasibility of encouraging use of these alternative services at new or existing developments. Chapter 6 provides more information on these services.

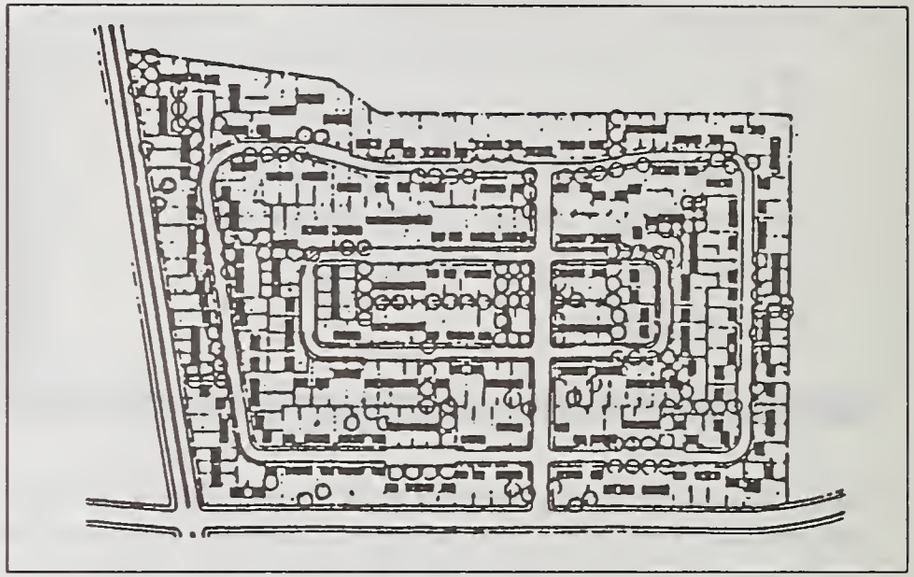
Concepts for New Suburban Development

New suburban development design concepts present additional opportunities to promote public transportation.

In recent years there has been an increasing need to create new forms of suburban residential development. This need arose from the recognition that quality of life is not determined by the auto, but by preserving open and recreational space, providing a mix of land uses and services, assuring a variety of housing types that enhance social opportunities, and promoting energy conservation. Costs of land and housing have become even more significant as available housing sites become fewer.

These new suburban development design concepts present additional opportunities to promote public transportation. These concepts enhance opportunities to design access, greater densities, and mixes of activities into subdivisions with the aim of increasing ridership on public transportation and reducing reliance on the auto.

Several alternatives to the traditional suburban development patterns and subdivision designs have evolved. The concepts that may be the most applicable to Snohomish County — and offer potential for high levels of public transportation compatibility — are briefly described.



One typical large-scale suburban subdivision
Source: Guide for Including Public Transit in Land Use Planning, Alameda - Contra Costa Transit District, (April, 1983)

Pedestrian Pockets

A comprehensive idea for new suburban development is the concept called "the pedestrian pocket." This concept creates a balance between housing, jobs, services and recreation in a pedestrian environment. Public transportation, fundamental to the concept, can be supplied by passenger rail and/or bus service.

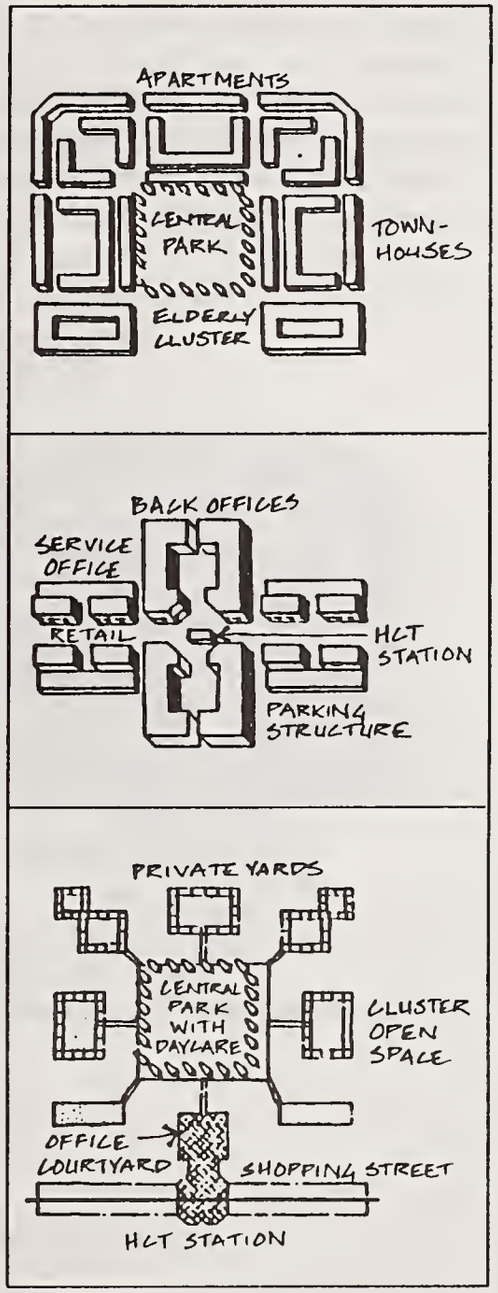
The pedestrian pocket provides a mix of services within a community, oriented around a large, common open space. Siting jobs and housing together, the concept increases residential densities (in low rise, three-story, walk-up apartments and two-story townhouses) to those that can support public transportation, while maintaining a pedestrian-scale community comfortable for walking. The concept does not exclude the auto but

Concepts for New Suburban Development, continued

The Pedestrian Pocket would provide for many types of housing needs; elderly clusters are an easy stroll to park, services, and trolley line; two story townhouses with attached garages and private yards provide for families; three story apartments provide for singles and childless couples.

The commercial center of the pedestrian pocket would mix large back office jobs with ground floor retail restaurants and smaller business. The retail would face the light rail line and all employees would be within walking distance of the station. Cars could circulate on the shopping street and parking structures would provide for those who choose to drive.

Diverse open space would be divided in the Pedestrian Pocket; private yards for the families; cluster open space for a group of houses; central parks to be used by all; courtyards and a "main street" shopping area around the station at the center.



Source: Pedestrian Pockets, Peter Calthorpe, (1987)

allows for the convenience of the car, the opportunity to walk, and the efficiencies of public transportation.

New Traditionalism

Another alternative to the traditional suburbs is the revival and reinterpretation of traditional nineteenth century town planning ideas called "New" or "Neo-Traditionalism." This concept is less well defined than the pedestrian pocket, but a dozen developments, mainly on the East Coast, have been built on this concept.

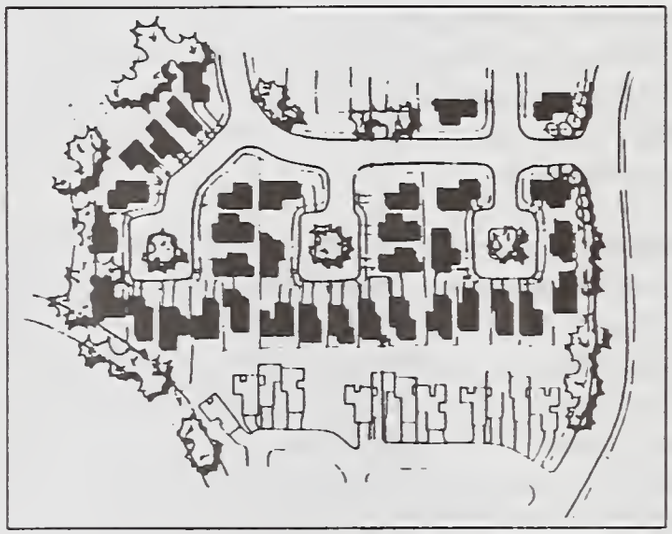
A pedestrian-scaled environment and mixture of housing types and other land uses are the main principles of this concept. Narrow, people-scaled streets, networks of footpaths, along with a comprehensive street system provide equal and convenient circulation to all modes of transportation. One feature which separates neo-traditionalism from the other new concepts is the integration of public spaces, parks and promenades into the circulation system.

Zero-Lot Line

Zero-lot line developments have been built in many communities to provide affordable housing and variety in housing styles. Suitable for urban and suburban areas, this concept combines features of the detached home with higher densities (7-15 dwellings/acre) which can be served by public transportation.

Concepts for New Suburban Development, continued

The primary feature of a zero-lot line home, which distinguishes it from a conventional home, is that the house is turned "sideways" on a lot. Setbacks for houses are reduced to minimize the lot width. The focus in zero-lot line design is on a quality street scene and improved treatment of outdoor spaces.



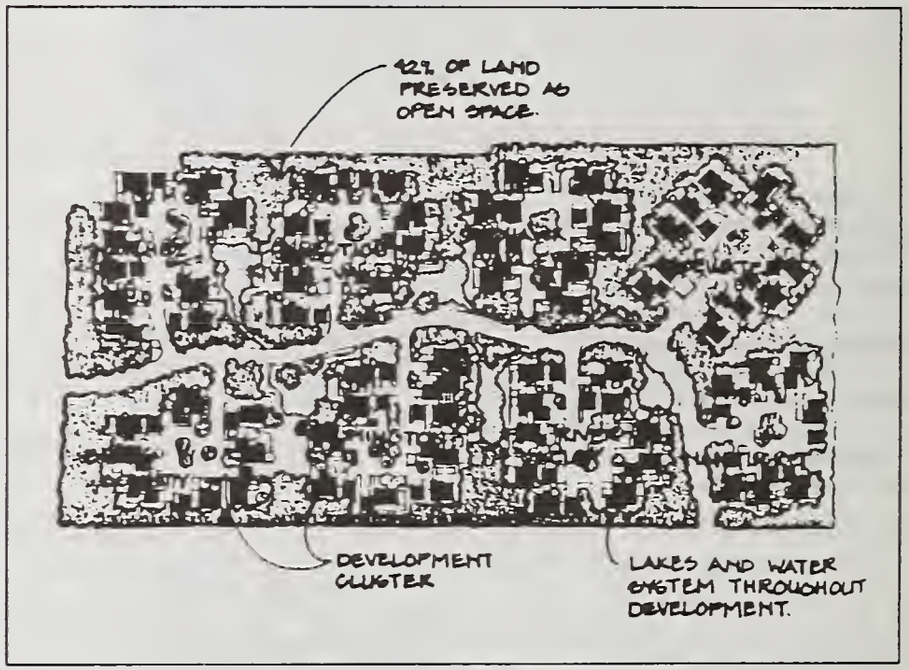
Zero-lot line development

Source: Site Planning for Cluster Housing, Richard Untermann, (New York, 1977)

Cluster Housing

Cluster housing is another alternative design approach for the suburban subdivision. Between the extremes of large lot suburban housing and the high-density apartments of a city is cluster housing. This concept is well suited for blending into existing suburban housing environments since clusters can be planned to have a scale and character compatible with their immediate neighbors.

Typically a cluster consists of a certain mix of housing types: detached, row, townhouse, patio house, or terrace. Cluster developments require the establishment of a comprehensive road system within the development to accommodate traffic. Typically a cluster is served from a main cul-de-sac or loop road connected to a collector road.



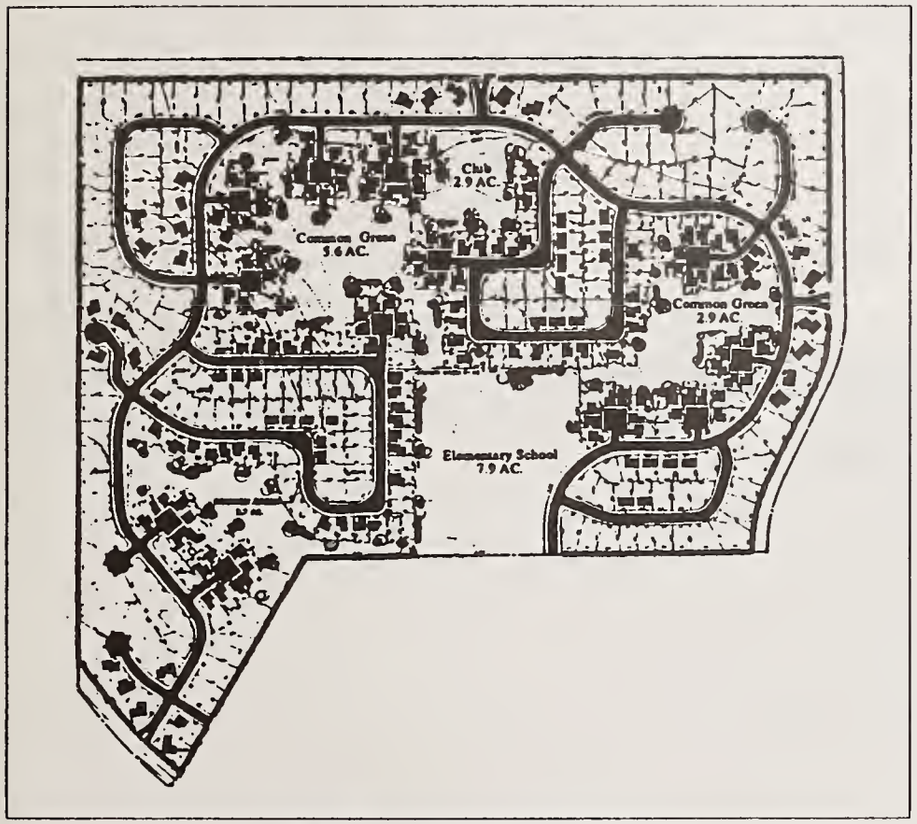
Cluster housing development

Source: Site Planning for Cluster Housing, Richard Untermann, (New York, 1977)

Concepts for New Suburban Development, continued

Planned Unit Development

Another popular alternative to the standard subdivision development is the master-planned community or planned unit development (PUD). There are approximately 100,000 PUDs in the United States housing one-tenth of the American population. PUDs are popular because they permit more creativity and flexibility in a development than the strict application of traditional zoning and subdivision regulations.



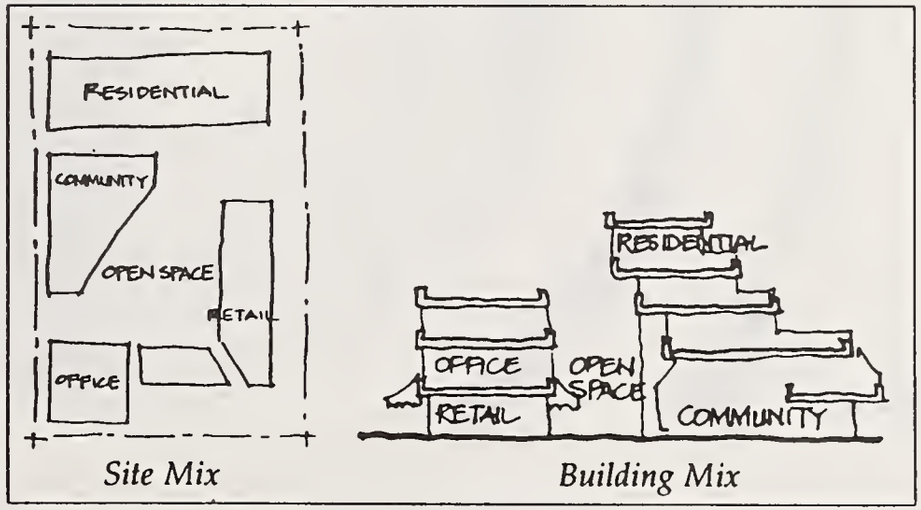
Large planned unit development

A PUD provides common open space, amenities, mixed uses, and the clustering of housing. Accessibility to public transportation can be easily planned into most PUD designs. (Refer to Chapter 8, "Public Transportation-Compatible Site Planning.")

Mixed-Use Development

This concept mixes different types of compatible land uses into a development or an area. For example, certain commercial uses such as banks, daycare centers, cleaners, beauty shops, or certain types of offices can be built into residential areas. Residences can also be designed into large office and research park developments.

The mixed-use concept allows people an opportunity to walk to a variety of destinations instead of having to drive from place to place. Mixed-use development can reduce the number of trips by 25%. In addition, mixed uses can make public transportation more viable since it can serve a variety of markets, not just peak-hour commuters. This concept is the opposite of the usual single-use zoning district found in most suburban areas.

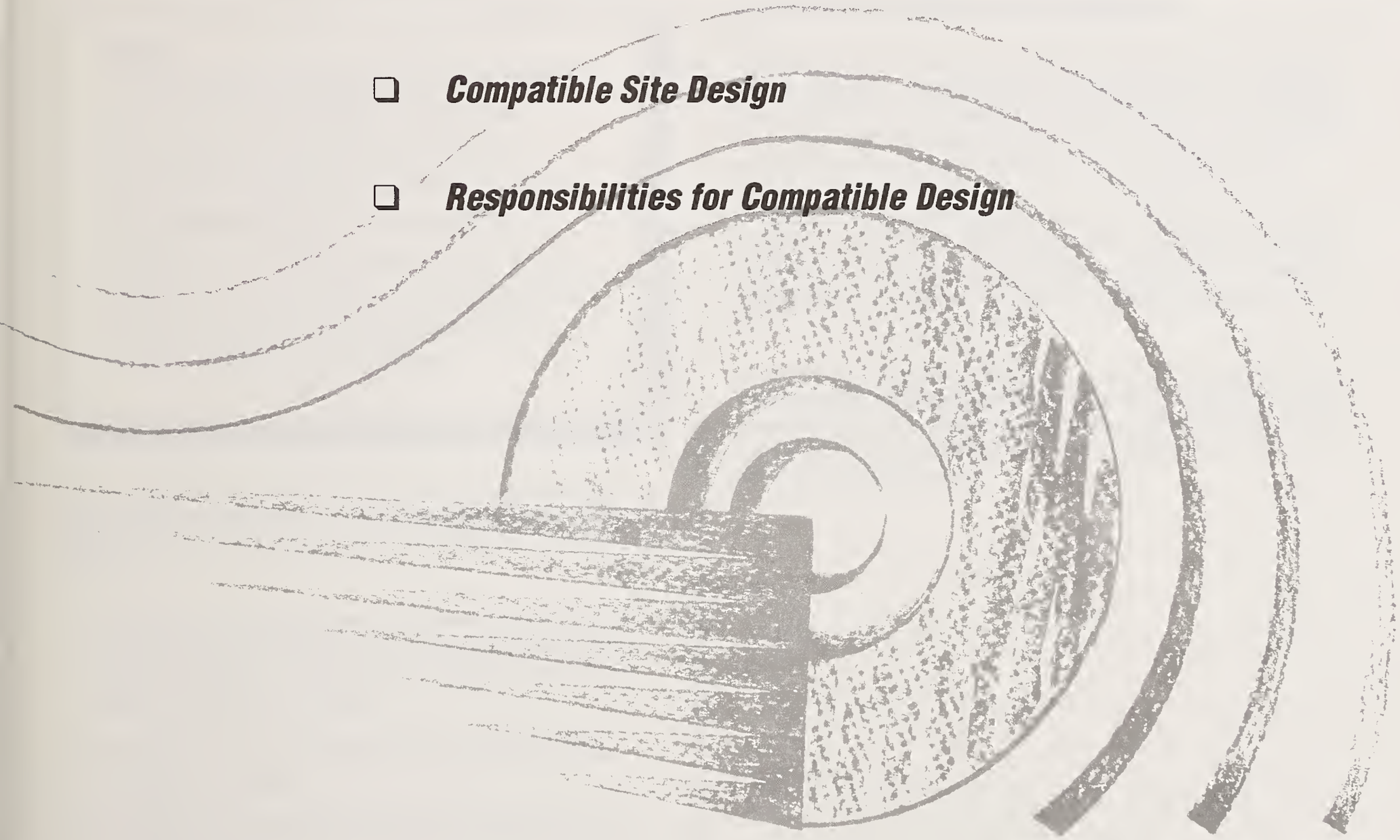


Mixed-use development

Source: Burnaby Metrotown, Burnaby Planning Dept., (June, 1977)

Chapter 8: Public Transportation – Compatible Site Design

- ❑ *Compatible Site Design*
- ❑ *Responsibilities for Compatible Design*



Introduction

With the rapid population growth and increasing traffic congestion occurring in urban and suburban areas throughout Snohomish County, the responsibility for managing traffic and finding alternatives to the private car is shifting from the public sector to a partnership of both the public and private sectors.

Local communities and developers have an opportunity and a responsibility to create an environment supportive of public transportation as one way to reduce congestion and increase mobility.

If commercial and multifamily residential developments are to add to the solution — be supportive of public transportation use — they need to be designed with two major considerations in mind:

- First, can the public transportation operator bring service to the site?
- Second, does the site's design encourage the use of those services?

Is the site public transportation compatible?

While any size development can benefit from carefully planned access to public transportation, the focus here is on developments which (a) will substantially add to congestion; and (b) will have opportunities through their site designs to make public transportation an attractive alternative to the private car.

The design concepts in this brochure are intended to be examples for developers and communities to use to start their common exploration of public transportation compatibility. **These examples must be tailored to meet the situation in each community.**

The term "**development**" means any commercial or multifamily residential development or redevelopment of a site for uses such as shopping centers, employment centers, office buildings, retail complexes, business and technical parks, apartments, townhouses, or a mixture of these uses.

Compatible Site Designs

Public transportation can be accommodated easily into most developments if it is included at the earliest stages in the design process and the public transportation operator is a partner in that process.

Five aspects of site design can have significant impacts on the public transportation compatibility of a development:

1. **Site Access** to and from a development.
2. **Building Location** within a development.
3. **Parking**, the amount and location, within a development.
4. **Internal Circulation** provided for the pedestrian and transit vehicles.
5. **Pedestrian and Transit Facilities** within a development.

Some of these design criteria may appear trivial, but their importance lies with creating development conducive to public transportation use and foot travel, each of which builds upon the other and can produce an environment for effective public transportation use.

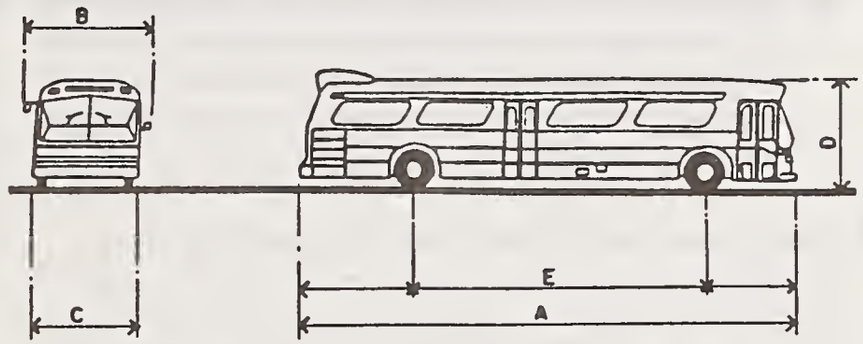
Compatible Site Designs, continued

> **Goal:** *Maximize public transportation and pedestrian access to a site.*

1 Site Access

Maximizing public transportation access means providing for the physical requirements of public transportation vehicles and for the physical and psychological needs of their users. Since most developments will only be served by the most common public transportation vehicles — buses and rideshare cars or vans — those are the focus here.

- ***For a development to be accessible, most of the following criteria must be met:***
  - Public transportation vehicles have to be accommodated on the road network that serves the development.
  - Roads must be designed to accommodate heavy-weight and large vehicle requirements.
  - Public transportation facilities, such as bus pullouts, must be considered in the initial design of a road network.
  - Bus access to a site can be substantially improved if high occupancy vehicle (HOV) lanes and preferential signals are provided. Developers may wish to work with local officials to build these facilities into the roads that serve their sites.

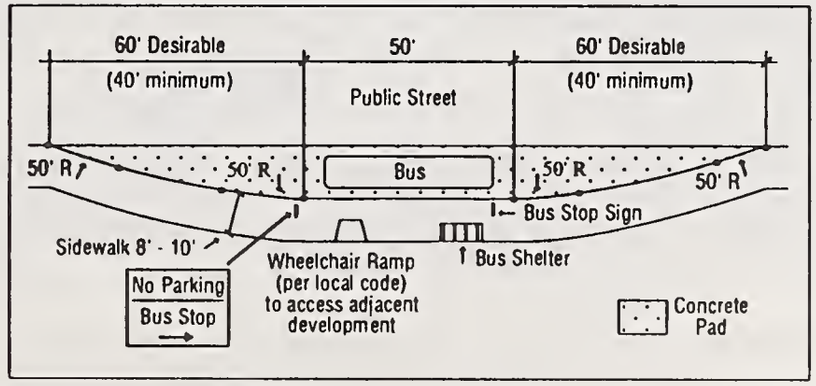


NOTES:

	MINIMUM	MAXIMUM
A - OVERALL LENGTH	35'-0"	40'-0"
B - OVERALL WIDTH (WITH MIRRORS)	9'-6"	10'-0"
C - OVERALL WIDTH (WITHOUT MIRRORS)	8'-0"	8'-6"
D - OVERALL HEIGHT	10'-0"	10'-4 1/4"
E - WHEELBASE LENGTH	19'-0"	24'-0"
GROSS VEHICLE WEIGHT (POUNDS)	35,000	39,600
FRONT AXLE CAPACITY	12,300	14,300
REAR AXLE CAPACITY	22,700	25,300
PASSENGER CAPACITY		
• SEATING	41	51
• STANDING	20	26
TOTAL	61	77

Large vehicle dimensions

Source: Design Guidelines for Bus and Light Rail Facilities, Regional Transit, (Sacramento, CA)



Design for bus pullout

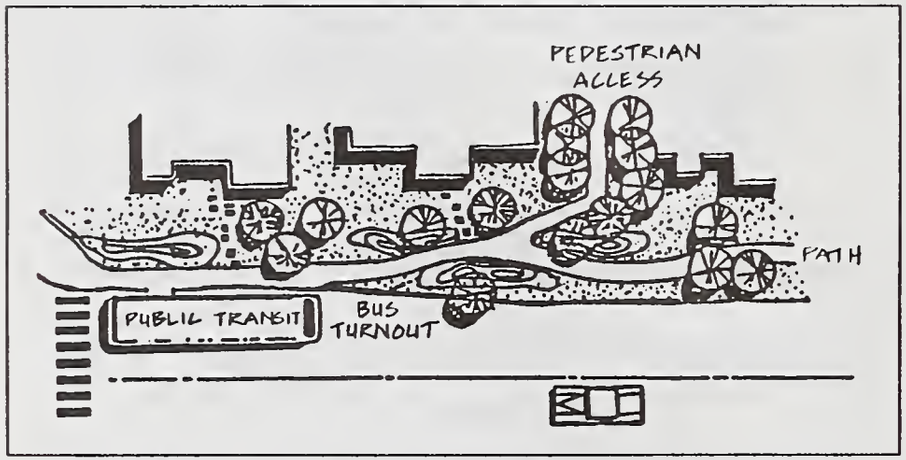
Source: Bus Facilities: Design Guidelines, Orange County Transit District, (1987)

Compatible Site Designs, continued

- Ridesharing can substantially reduce traffic volumes by reducing the total number of vehicles while carrying larger numbers of people. Carpools and vanpools use regular streets, but can operate more efficiently if they can use HOV lanes.

■ *Equal consideration must be given to pedestrian access.*

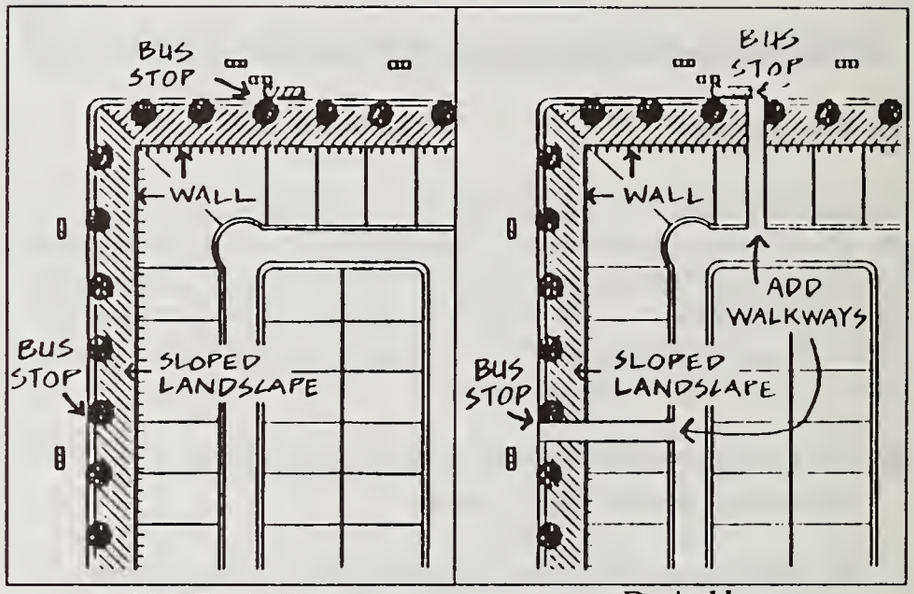
The streets adjacent to a development must have sidewalks and other safe pedestrian facilities such as bus shelters. Pedestrians need convenient and safe access between a transit facility, or a street with a bus stop, and the entrance to a building or cluster of buildings.



Desirable Design - Pedestrian access to bus stop is direct and convenient.

Source: Guide for Including Public Transit in Land Use Planning, Alameda - Contra Costa Transit District, (Oakland, CA)

Developments enclosed by walls and fences need to provide openings or gates so that walkways can provide direct access between the development and transit facilities.



Not Desirable
Walls, berms, or steep slopes between bus stops and building may prohibit transit use.

Desirable
Walkways and gates make transit accessible.

Source: Design Guidelines for Bus Facilities, Orange County Transit District, (1987)

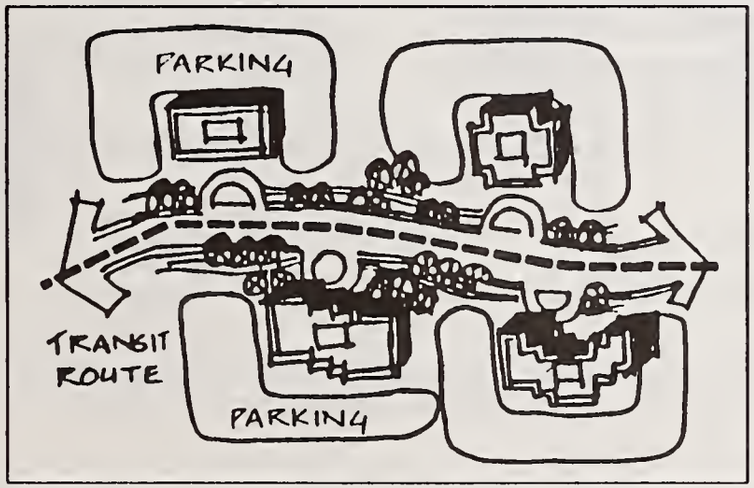
Compatible Site Designs, continued

> *Goal: Orient buildings toward public transportation facilities and not parking lots. Buildings must be as conveniently situated to public transportation facilities as they are to auto parking.*

2 Building Location

To locate buildings in a manner that helps create a public transportation-compatible development, all the following criteria must be met:

- ***Locate buildings as close to streets with transit facilities or to internal transit stops as possible.***



Typical design concept in which buildings are oriented along streets with sidewalks.

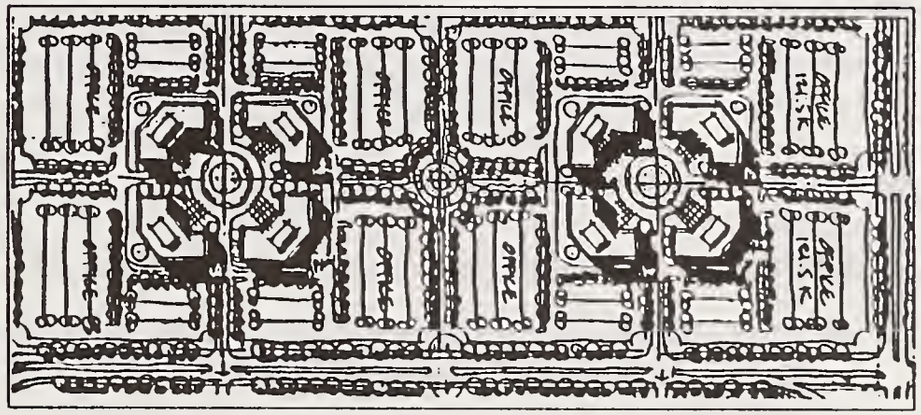
Source: Planning and Implementing Pedestrian Facilities in Suburban and Developing Areas Research Report Transportation Research Board, (1987)

- ***Arrange buildings on a site to reduce the walking distance between each of the buildings and the nearest transit facility.***

- ***Cluster buildings together.***

  Clustering buildings around a central pedestrian space provides the best opportunity to encourage pedestrian access to a site while shortening walking distances and promoting walking circulation on site to reduce auto driving between buildings in a development.

  In building clusters, provide an identifiable and dominant entrance to the cluster that is clearly visible from the nearest transit facility. Within clusters, assure that each building's entrance faces the other entrances or is in close proximity so that clear pedestrian destinations can be identified.



Buildings clustered at an intersection - entrances close to street with a bus stop, plus close to each other.

Source: Planning and Implementing Pedestrian Facilities in Suburban and Developing Areas Research Report Transportation Research Board, (1987)

Compatible Site Designs, continued

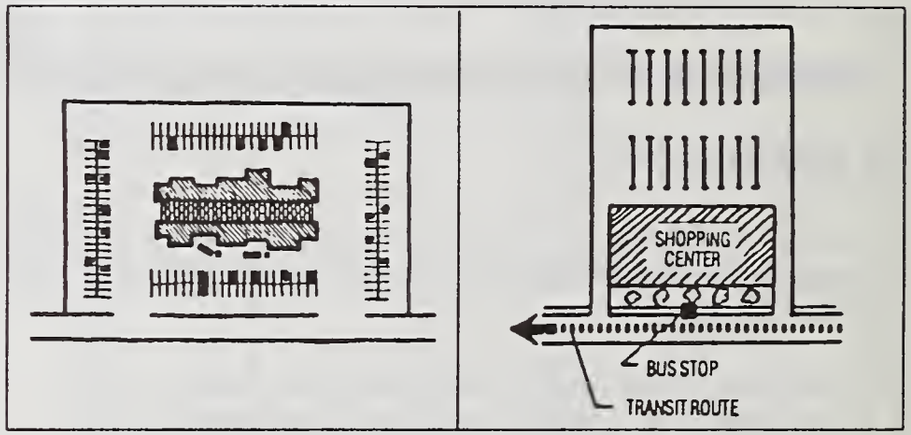
> *Goal: Encourage the use of alternatives to the single occupant auto by reducing the impacts of parking through the design of parking at a development.*

3 Parking

The placement of parking is a key ingredient for successful pedestrian and public transportation circulation. Large, free parking lots reinforce auto dependency in suburban developments. In such environments there are no compelling reasons to use public transportation.

As developers consider creating developments that are less reliant on autos and encourage the use of public transportation and pedestrian access, all the following criteria need to be met:

- ***Reduce the amount of parking required through developing programs to encourage ridesharing, transit usage, and walking.***
  - Work with the local transit operator to develop transit ridership marketing programs for the development.
  - Reduce the negative impact on public transportation ridership with the designs and locations of parking lots.
  - Provide preferential parking close to building entrances for rideshare vehicles.
- ***Locate parking to the sides and backs of buildings so that access from public transportation does not require walking through large parking lots to reach building entrances.***



Undesirable
No pedestrian connection provided, distance between building and bus is too far.

Desirable
Parking behind, bus stop close to entrance, walkways to entrance

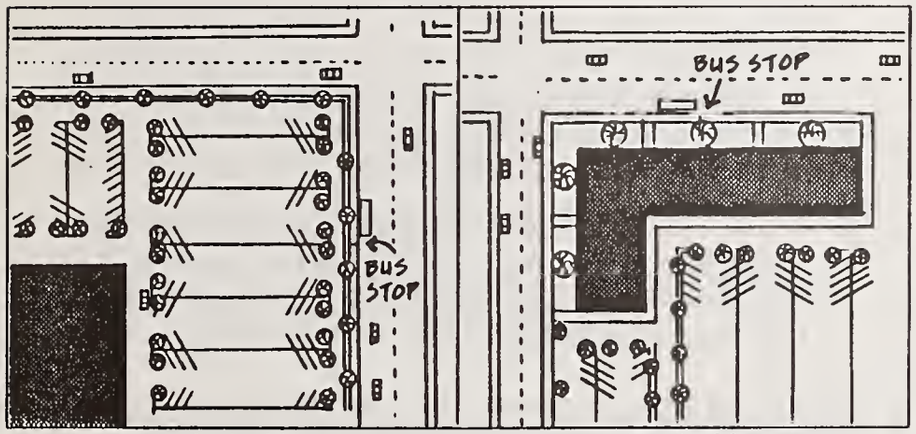
Source: Design for Bus Facilities, Orange County Transit District, (1987)

Compatible Site Designs, continued

Transit related development

Automobile related development

Source: Public Streets for Public Use, Portland's Arterial Street Classification, Dottemer, (1987)



Undesirable
Buildings separated from street by parking

Desirable
Parking behind building

Source: Guidelines for Public Transit in Small Communities, Small Community Systems Branch, Urban Transit Authority of British Columbia, (1980)

- Locate bus stops and passenger drop-offs at the major entrances to buildings rather than across the parking lot. Design landscaping and fencing within parking lots so that they do not create barriers for pedestrians or transit users and especially for disabled pedestrians.

■ **Balance the location of parking with pedestrian and transit access and circulation.**

- Large parking lots become major barriers for pedestrians and public transportation vehicles since they seldom provide clear, direct pathways for safe, easy movement.

> *Goal: The ease and safety of pedestrian and public transportation circulation is the main design focus in creating a public transportation-compatible development.*

4 Internal Circulation

Successful internal circulation requires that pedestrian and public transportation be designed together as compatible, integrated circulation systems.

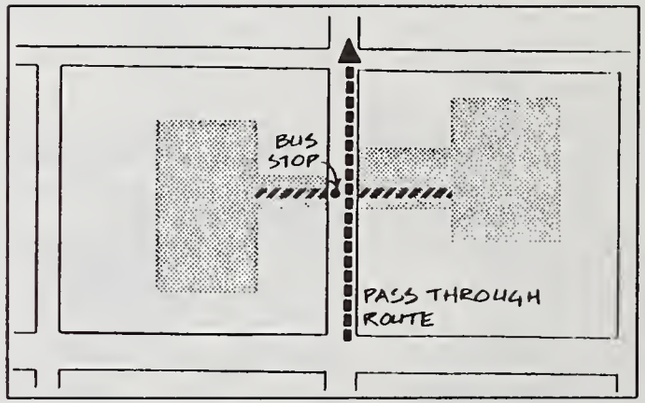
Compatible Site Designs, continued

If a development is designed as if all pedestrian's access and circulation to, from, and within a development were for persons with disabilities, the total result would be a very human scale and public transportation-compatible environment that is good for everyone.

Public Transportation

Planning for public transportation vehicle circulation has not been as common as pedestrian facilities design within developments. However, this situation is changing as developers begin to look for solutions to auto congestion. For public transportation to provide on-site service and maintain reasonable schedules, most of the following criteria need to be met:

- ***Design internal road improvements to handle public transportation vehicles.***
  - Roads must be able to accommodate large, heavy-weight buses and provide extra space for turning, turning-around and for stopping for brief periods. Standards for transit compatible road design are available through the local transit operator.
  - In developments where high levels of bus activity are planned, HOV lanes and transit centers may be worth designing into the site plan as well.
- ***Design direct streets through a development.***
  - Buses cannot afford the time to weave through a development. Direct routes through developments, segregated from congested parking lots, are necessary if buses are to keep their schedules. Buses cannot afford to be held up in the congestion common to parking lots nor are parking lots usually built to support heavy vehicles. The design of a development itself can go a long way to reduce conflicts between transit vehicles and autos.



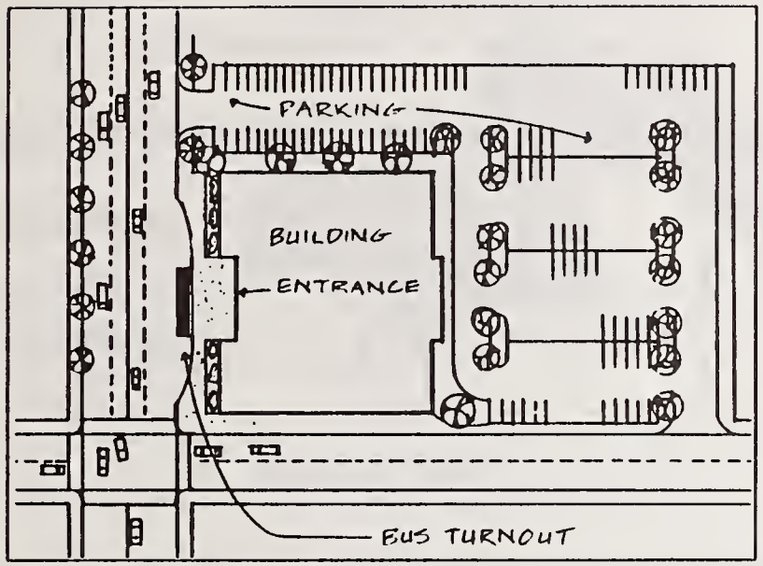
Direct pedestrian access from mall to bus stop

Source: L.E. Miller, Community Planning for Public Transit, Transit Services Division, Ministry of Municipal Affairs and Housing, (Province of British Columbia, 1976)

  - Work with the transit operators to design the optimum number of transit stops and to provide bus bypasses for bottlenecks such as congested intersections and parking lots.
- ***Design transit use into the major streets that serve the main entrances of buildings.***

Compatible Site Designs, continued

- To be effective, on-site transit must serve the main entrances of buildings and main entrances to clusters of buildings.



Desirable
Transit serves main building entrance.
Source: Design for Bus and Light Rail Facilities, Regional Transit, (Sacramento, CA, 1987)

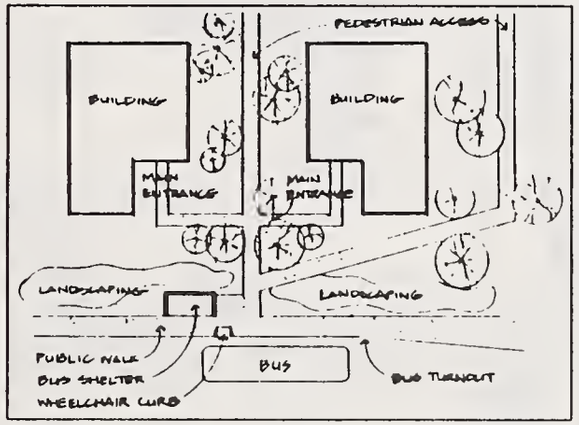
■ ***Provide exclusive bus lanes, entrances and exits when traffic volumes warrant such facilities.***

- If a large development has lanes set aside for transit, those lanes can also be used for rideshare vehicles. If ridesharing is to be used, priority access and parking must be provided.

Pedestrian Circulation

People will walk 500 to 1,000 feet to a bus stop. This distance should be measured using the actual walking route. Older people will walk slightly less distance than younger people — approximately 750 feet. People can be expected to walk 1,250 feet to a passenger rail station or to a park-and-ride lot. Walkways need to be built according to the following criteria:

■ ***Locate walkways so the pedestrian has a short distance to walk between a transit facility, or a street with a transit stop, and the entrance to a building.***



Desirable
Direct access to bus stop.
Source: Design for Bus and Light Rail Facilities, Regional Transit, (Sacramento, CA, 1987)

- Provide visual as well as physical pathways to streets with transit facilities. Integrate transit centers or bus stops with other pedestrian areas and open spaces.

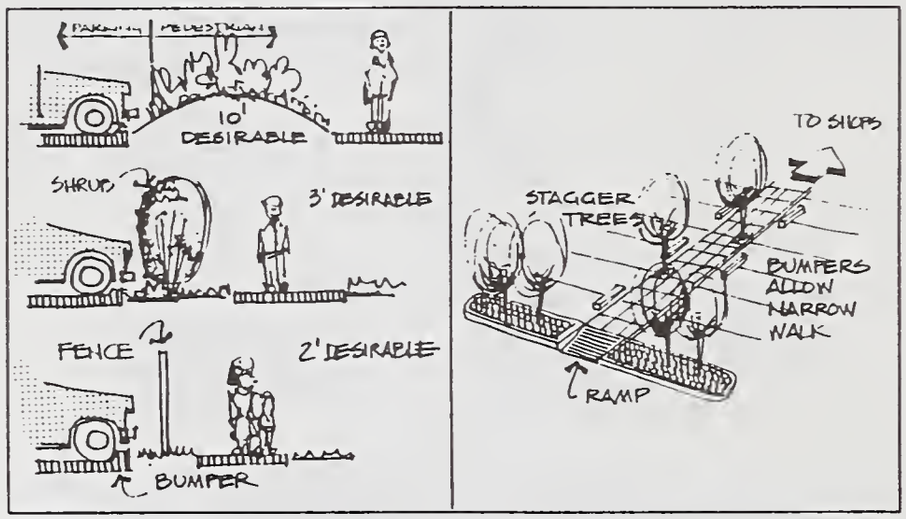
■ ***Connect all buildings on site to abutting land uses with walkways.***

Compatible Site Designs, continued

- To stimulate walking, all buildings in a development must be connected by paved walkways not only to each other but also to adjoining buildings, particularly in mixed-use developments.

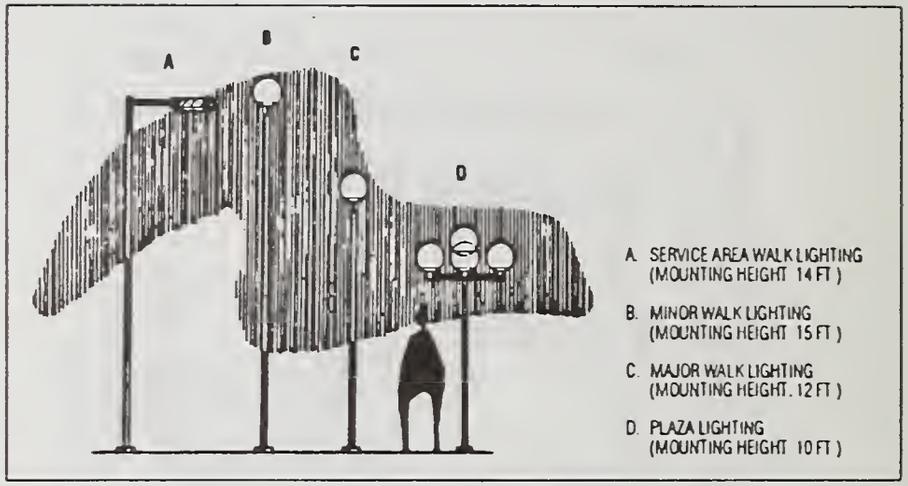
■ *Separate roads and parking from pedestrian pathways by grade separations or other devices.*

- Minimize opportunities for pedestrian/auto conflict by consolidating driveways, creating safe pedestrian crossings, and providing continuous sidewalks and curbs.



Separate the pedestrian from the auto.
Source: Accommodating the Pedestrian, Richard Untermann, (New York, 1984)

- Adequately lit pathways and transit facilities, visible from buildings, are necessary for pedestrian security.



Pedestrian lighting
Source: Plan Graphics, Walker, Theodive, (Mesa, AZ, 1985)

■ ***Walkways must meet all state and local barrier-free design standards to facilitate use by all people.***

- Each community has adopted barrier-free design standards to assure that developments are accessible to, and safe for use by, people who have disabilities.

Compatible Site Designs, continued

> **Goal:** *Provide a quality environment for pedestrian walkways and for transit centers and bus stops.*

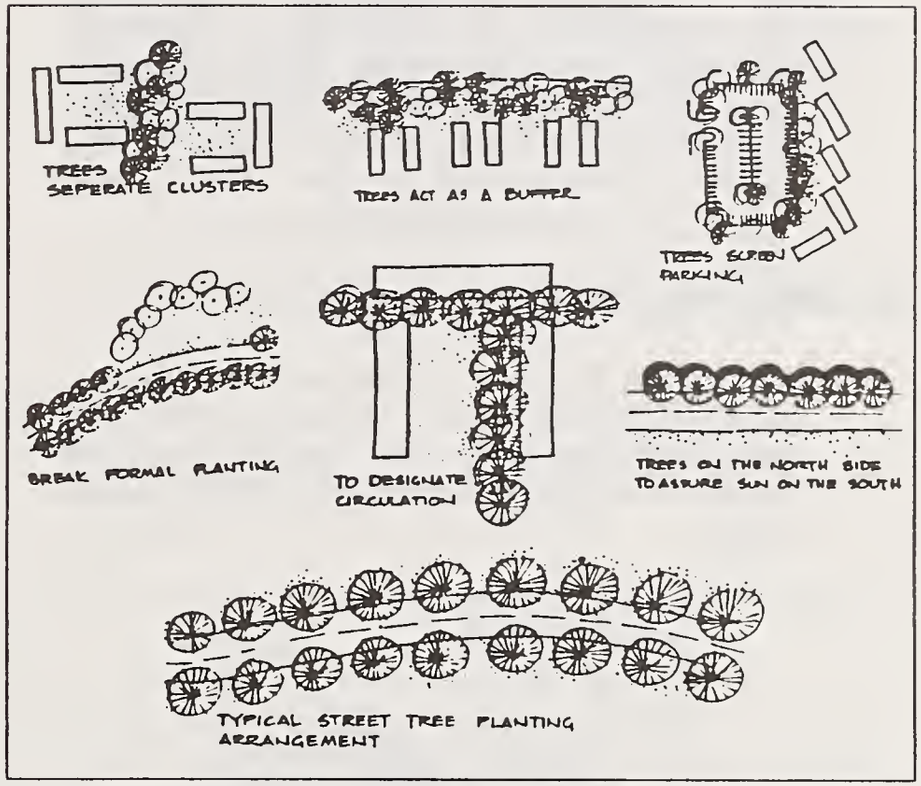
5 Pedestrian and Transit Facilities

Designing quality into the walk to, and the wait at, a transit facility is as important for design consideration as is the provision of walkways and bus stops.

Walkways

People will walk farther in a quality pedestrian environment. People may use the bus if the walk to the destination is not only convenient, but is also a pleasant experience. The Northwest weather can also have a marked effect on the extent people will use public transit and must be considered in designs. The following criteria need to be followed:

- ***Pave all walkways***
  - All walkways must be paved. Paving material should be safe under wet weather conditions.
- ***Buffer walkways with landscaping***
  - Enhance walkways with partial screening from parking lots and streets with earth berms, trees and other vegetation. Small trees are no substitute for large ones in an urban/suburban landscape. However for pedestrian safety, landscaping must not interfere with visibility. Landscaping should be an integral part of early design studies.



Landscaping walkways

Source: Site Planning for Cluster Housing, Richard Untermann, & Robert Small, (Van Nostrand Co., NY, 1977)

  - Create a minimum of a four to six-foot planting strip with trees to buffer sidewalks from the street and, if feasible, provide another row of street trees between the sidewalk and the property.

Compatible Site Designs, continued

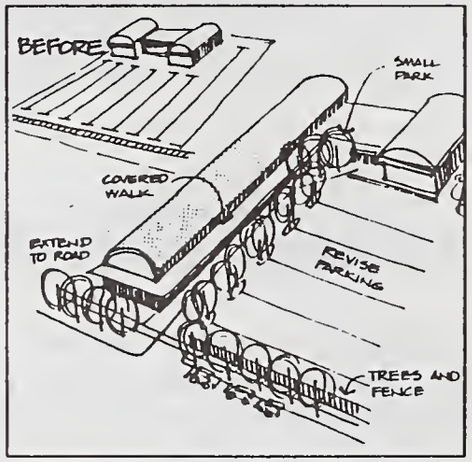
- Plan walkways to capture landmarks and views where available.

■ *Scale the size of facilities to correspond to pedestrian volumes.*

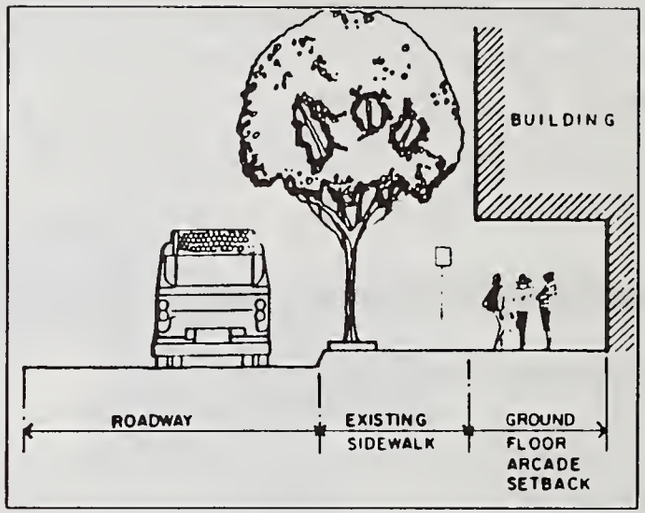
- Provide an eight-foot minimum width sidewalk adjacent to a transit stop and increase the width if the number of users warrants additional circulation space. The minimum width of a walkway is six feet. Provide pedestrian facilities such as signs, benches, trash cans, etc., as the volume and need requires.

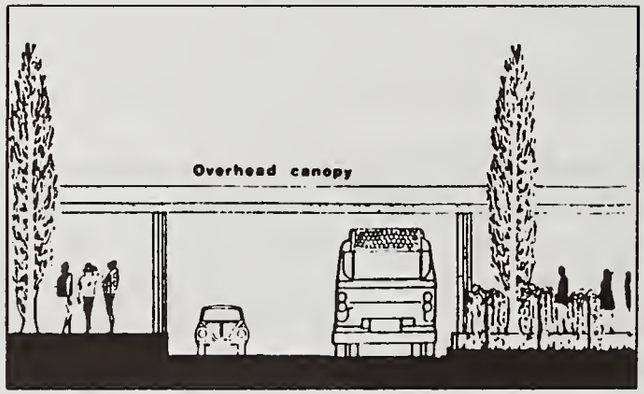
■ *Shelter the pedestrian from the weather.*

- In the Pacific Northwest, protection from the rain is an important design factor. Provide covered, colonnaded walkways or arcades. Canopied, tree-lined walkways can also provide some protection from the weather.



Shelter the pedestrian from the weather.
Source: Accommadating the Pedestrian, Richard Untermann, (New York, 1987)





Shelter the pedestrian from the weather.
Source: Design Guidelines for Bus and Light Rail Facilities, Sacramento Regional Transit

Transit Facilities

Special attention needs to be given to pedestrian facilities near bus stops and transit centers. **All transit facilities considered for a site, must be developed with, and approved by, the transit operator.** Locating bus stops or other facilities without operator participation will not assure transit service.

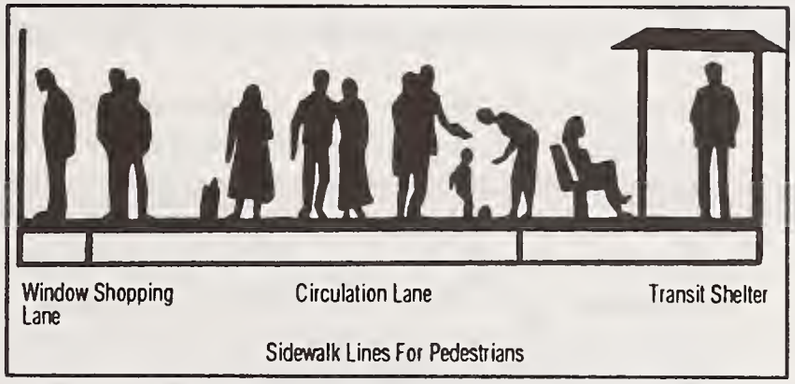
Compatible Site Designs, continued

The following criteria will help make transit stops work effectively:

- ***Provide shelters to protect patrons from the weather.***
  - Transit operators usually have adopted a standard bus shelter design which provides shelter while remaining safe, easy to maintain, and relatively vandal proof. Designers should consult their local operators on shelter design.

- ***Consider a bus stop as a significant destination and an important part of the design of any development.***
  - The transit stop — whether it is a simple bus stop or a transfer center — can be a great opportunity to create a dominant entrance to a development. Since a transit stop can serve as an introduction or farewell to a development, it can create the first or last impression people have of the site.
  - Consider combining a transit facility with a shared plaza placed between neighboring buildings or at the main entrance to the development.

- ***Separate waiting places for transit patrons out of the walking path can improve pedestrian circulation.***



Separate transit patrons from pedestrian circulation

Source: Streets For Pedestrians and Transit: An Evaluation of Three Transit Malls in the U.S. Crains & Associates, Menlo Park, CA DOT UMTA (February, 1979)

- ***Provide pedestrian facilities at transit stops.***
  - All facilities must be approved by the local transit operators and the local jurisdiction.
    - ▲ Benches with back rests (both sheltered and non-sheltered).
    - ▲ Attractive, well maintained landscaping.
    - ▲ Trash containers with lids.
    - ▲ Walkway lighting between transit stops and buildings and at transit waiting areas.
    - ▲ Community information displays and guides.

Responsibilities for Compatible Design

These design criteria are of no use unless they are placed into practice. The following people play key roles in determining whether the design criteria are used and, ultimately, whether public transportation is incorporated into a development:

- **Developers** - ultimately decide whether or not to use these design criteria and other concepts. It is the developer who will balance the various costs, such as the market, the demand for various needs, public regulations along with environmental mitigation. Developers can work with local governments to develop flexible design guidelines to permit public transportation supportive developments. In addition, developers can look for opportunities to create public/private partnerships.

- **Public Officials** - adopt and support plans and policies and implement public transportation-compatible design regulations. Public officials must remain open to new ideas and different solutions. By their actions, public officials can educate the community to the benefits of, and the need for, public transportation-compatible design.

In addition, public officials and developers need to consider the suitability of land uses that generate high traffic volumes in non urban locations where alternatives to the auto do not exist and may be difficult to develop. As congestion spreads, restricting traffic-generating land uses to areas with transit services may be required.

- **Public Agencies** - work with developers and the local transit operators to understand their needs and incorporate them as design guidelines are developed. It is crucial that public staffs be receptive to new ideas and flexible solutions. Finally, it is the job of public agencies to review all development applications to enforce the regulations.

- **Public Transportation Operators** - educate and work with the private developers and agencies on both designing development standards and applying those standards to individual developments. Ultimately, they can supply or withhold transit service to a site or area.

- **Existing or Prospective Tenants** - can work with developers to bring bus or rideshare services to the development to help relieve congestion and enhance the visibility of the site.

Chapter 9: Public Transportation Compatibility Worksheets

- ❑ *Using the Worksheets*
- ❑ *Worksheet #1 - For Use by Developers, Property Owners and Local Jurisdictions*
- ❑ *Worksheet #2 - For Use by the Public Transportation Agency*

Introduction

Public transportation works most effectively in settings that are public transportation compatible.

If community planners, developers or public transportation agencies want to know whether public transportation will work at a site, they need to look at various compatibility indicators. Key among the indicators are the presence of compatible land uses, high levels of activity, compatible site design, parking management, and rider incentive programs. *Public transportation works most effectively in settings that are public transportation compatible.*

The conditions that make up public transportation compatibility are summarized in the two worksheets that make up this chapter. The worksheets are guides for evaluating the compatibility of a development as one part of an overall project evaluation process. The worksheets can be used for private developments such as shopping centers or residential subdivisions and for public projects such as civic centers, housing complexes, and recreation facilities.

The worksheets can be used to bring compatibility information into the project review processes. They can also be used to assess options if a site proves to be incompatible to one mode of public transportation or if a site cannot be served in the short term, due to resource constraints or ridership demand levels that are not yet adequate to warrant service.

Using the Worksheets

The two worksheets are proposed for use during:

- The initial planning phase prior to the development or redevelopment of a site;
- The SEPA review process; and
- Subsequent assessments to determine if public transportation services can be brought to an already developed site to mitigate increased congestion or meet transportation needs that were not identified earlier.

It is important that the public transportation operator(s) be involved during the entire design and review process, particularly for large projects that will generate substantial traffic and could be made public transportation compatible.

The first worksheet is for the site developer or property owner to fill out. It establishes base information that is needed to determine whether the site and its land uses are public transportation compatible.

The second worksheet is for the public transportation agency to use once the first worksheet has been completed. The agency will use the two worksheets to make its evaluation of the operational compatibility of the site.

Both worksheets are designed in the same format so that the operator can easily take information from Worksheet 1 as Worksheet 2 is developed. The operator's worksheet assumes that the operator will (a) review the development proposal and site plans and (b) if needed, pay a visit to the site.

The concept of public transportation compatibility is the subject of the eight chapters that precede this one. Users of these worksheets are directed to the following chapters for supporting information:

Chapter 3: *Public Transportation-Compatible Land Uses*

Chapter 7: *Public Transportation-Compatible Subdivision Design*

Chapter 8: *Public Transportation-Compatible Site Design*

Appendix A: *Public Transportation Terms*

While these worksheets will help assess the public transportation compatibility of a project, they will not assure that service will be provided to the site. Only the appropriate public transportation agency, working with the people responsible for the project, can determine whether service can be provided effectively now or at some time in the future, or whether resources are available to provide the new service.

Public Transportation Compatibility (PTC) Indicators are provided throughout the worksheet to help users assess the degree of compatibility a project achieves.

Worksheet #1 – For Use by Developers, Property Owners and Local Jurisdictions

◆ *Public Transportation Compatibility (PTC) Indicators are provided at the end of each section of this worksheet to help users assess the degree of compatibility a project achieves.*

The Public Transportation Compatibility Worksheet

Site Name: _____

Address: _____

Worksheet Prepared By: _____

Phone: _____

Date: _____

Public Transportation Orientation

1. What modes of public transportation currently serve this site? .....

- ☐ local bus
- ☐ express bus
- ☐ carpool
- ☐ vanpools
- ☐ ferries
- ☐ rail
- ☐ special service vans
- ☐ other:_____
- ☐ no public transportation serves the site now

2. From the center of the property, what is the distance to the nearest: (specify unit of measure) ..... bus route? ☐ feet/miles

bus stop? ☐ feet/miles

Worksheet #1 – For Use by Developers, Property Owners and Local Jurisdictions, cont.

Public Transportation Orientation, continued

3. Where is the nearest park and ride lot? ..... (location) _____

	YES	NO	NOT CLEAR
4. Has the local public transportation operator been notified about this compatibility assessment?	☐	☐	☐
5. Does the public transportation operator have adopted plans to serve the site in the future (if not currently served)?	☐	☐	☐

If YES, when? _____

Worksheet #1 – For Use by Developers, Property Owners and Local Jurisdictions, cont.

A. Land Use Compatibility

1. Land Uses
   a. What are the land uses proposed for this development? .....

Land Uses	% of Site
_____	____%
_____	____%
_____	____%
_____	____%
_____	____%
	100%

2. Development Intensity
   a. Residential density: ..... ☐ dwelling units per acre
   b. Employment density: ..... ☐ employees per acre
   c. Proposed Floor Area Ratio (FAR):[1] ..... ☐ FAR

♦ PTC Indicator A:

The greater the mix of compatible uses, the higher the compatibility. Higher intensity development and floor-area ratios mean more compatible development.

	Residential Density	Employment Density	Proposed FAR		
If you answered:	1-4 DU/acre	1 - 50 employees/acre	.1	**then score:**	0 ☐
	5-7	50 - 60	.3		2 ☐
	8-14	60 - 100	.3 - .6		3 ☐
	15-20	100 - 300	.6 - 2.0		4 ☐
	21+	300 - 600	2.0 - 4.0		5 ☐
				Total PTC Indicator A Score:	☐

[1] Floor Area Ratio (FAR) is measured as the building area as a percentage of overall lot area. FAR calculations are usually made for commercial/employment land uses.

Worksheet #1 – For Use by Developers, Property Owners and Local Jurisdictions, cont.

B. Site Access

	YES	NO	NOT CLEAR
1. Will special site design be used to be make the site accessible by modes other than autos/trucks?			
a. Reserved parking for carpools/vanpools?	☐	☐	☐
b. Transit facilities for buses?[2]	☐	☐	☐
c. Paved sidewalks, walkways, crosswalks for pedestrians?	☐	☐	☐
d. Marked routes and racks for bicycles?	☐	☐	☐

2. How many auto trips will be generated by this site each day?	☐ trips	
a. How many during the A.M. peak?	☐ trips	
b. How many during the P.M. peak?	☐ trips	
3. What will your site's A.M. peak period be?	____ to ____	☐ Don't Know
What will your site's P.M. peak period be?	____ to ____	☐ Don't Know

♦ PTC Indicator B

Public transportation works best where access for a variety of modes — not just the auto — is included in the design.

This rating is based on adding compatibility features to basic auto/truck access: The more features, the better the rating.

If you answered:	**then add :**
Auto/Truck Only	0 ☐
Pedestrian Facilities	1 ☐
Bicycle Facilities	1 ☐
Preferential Parking for Rideshare	3 ☐
Transit Facilities[2]	5 ☐
	Total PTC Indicator B Score: ☐

[2] Bus stops, transit centers, etc.

Worksheet #1 – For Use by Developers, Property Owners and Local Jurisdictions, cont.

C. Site Design

	YES	NO	NOT CLEAR
1. Are buildings sited to facilitate access to existing or planned public transportation facilities?[3]	☐	☐	☐
2. Do the location and design of parking lots interfere with pedestrian access to public transportation facilities?	☐	☐	☐
3. Are there any barriers (walls, major roadways, large landscaped areas) between buildings and the nearest transit facility?	☐	☐	☐
4. Are major building entrances visible from the nearest transit facility and direct routes to them clearly marked?	☐	☐	☐
5. Does the development provide all-weather pedestrian access between the public transportation facility and building entrances?	☐	☐	☐
6. Does the development provide shelters, benches and lighting for transit users?	☐	☐	☐
7. How far *in actual walking distance* will a transit rider walk to the nearest public transportation facility from the buildings in this development?	_____ feet		

◆ PTC Indicator C:

Public transportation works best when barriers to use are minimized and when a quality pedestrian environment is provided.

For Questions 1-7:

6 Yes answers = 5 (High)

3 Yes answers = 3

0 Yes answers = 0 (Low)

Low ◆ ◆ ◆ ◆ ◆ ◆ High

0 1 2 3 4 5

Total PTC Indicator C Score: ☐

[3] Public Transportation facilities include bus stops, transit centers, park-and-ride lots, ferry terminals, express bus and rail stations.

Worksheet #1 – For Use by Developers, Property Owners and Local Jurisdictions, cont.

D. Parking Management Compatibility

1. What is the minimum parking ratio at the site that is required by the zoning ordinance? ..... ☐ spaces per_____

	YES	NO	NOT CLEAR
2. Is the parking provided greater than that required by the zoning ordinance?	☐	☐	☐
3. Is there a charge for parking?	☐	☐	☐
4. If there is a charge for parking, is there a discount for carpools/vanpools?	☐	☐	☐
5. Are carpools and vanpools given priority parking spaces closest to building entrances?	☐	☐	☐

◆ PTC Indicator D:

Free parking is a major incentive to auto use. Public transportation cannot compete with free parking especially if it is more accessible to the destination than are transit facilities.[4]

For Questions 2-5:

4 Yes answers = 5 (High)
2 Yes answers = 3
0 Yes answers = 0 (Low)

Low ◆ ◆ ◆ ◆ ◆ ◆ High
0 1 2 3 4 5

Total PTC Indicator D Score: ☐

[4] Parking is discussed in Chapters 7 and 8.

Worksheet #1 – For Use by Developers, Property Owners and Local Jurisdictions, cont.

E. Public Transportation Incentive Program

Has the developer proposed/agreed to:

	YES	NO	NOT CLEAR
1. Any incentive programs to reduce single-occupant vehicle trips generated by this development?	☐	☐	☐
2. Distribution of information concerning alternative transportation modes to site tenants?	☐	☐	☐
3. Provision of transit passes or carpool/vanpool subsidies to site employees or residents?	☐	☐	☐
4. Participation in the provision of shuttle services to and from transit facilities or park-and-ride lots?	☐	☐	☐
5. Sale of transit passes on site?	☐	☐	☐
6. Provisions for flexible working hours?	☐	☐	☐
7. Provision of a rideshare coordinator for large scale developments?	☐	☐	☐
8. Other (Describe): _____			

◆ PTC Indicator E:

Incentive programs can encourage people to try alternatives to autos such as ridesharing or using the bus.[5]

For Questions 1-8:

8 Yes answers = 5 (High Quality Program)

4 Yes answers = 3

0 Yes answers = 0 (No Program)

No Program					High Quality Program
◆	◆	◆	◆	◆	◆
0	1	2	3	4	5

Total PTC Indicator E Score: ☐

[5] Incentive programs are discussed in Chapter 6.

Worksheet #1 – For Use by Developers, Property Owners and Local Jurisdictions, cont.

F. Preliminary Compatibility Summary

This summary provides an initial indication of the degree of compatibility that a site may have. This information will be added to the information on the public transportation agency's worksheet for a more complete assessment.

(Add up the Rating Totals from sections A-E above.)

PTC Indicator A Score: ☐
PTC Indicator B Score: ☐
PTC Indicator C Score: ☐
PTC Indicator D Score: ☐
PTC Indicator E Score: ☐
Total Compatibility Indicator Rating: = ☐

1. Based on the Compatibility Indicator Rating above, how potentially compatible is this development with public transportation services in place or planned for this location?

	Rating	Compatibility
If your total was:	0-10	Not Compatible
	11-15	Somewhat Compatible
	16-20	Generally Compatible
	21-25	Very Compatible

Compatibility: _____

2. What elements need additional work to make them public transportation compatible?

Comments:

_____
_____
_____
_____
_____
_____
_____

☐ Land Use
☐ Site Access
☐ Site Design
☐ Parking
☐ Incentives

Worksheet #2 – For Use by the Public Transportation Agency

◆ *Public Transportation Compatibility Indicators (PTCI) are provided at the end of each section of Worksheet #1 and should be used to help the operator assess the degree of compatibility a project achieves. At the end of each section of this worksheet, Compatibility Measures (CM) are provided for a more comprehensive analysis of compatibility.*

The Public Transportation Compatibility Worksheet

Site Name: _____

Address: _____

Worksheet Prepared By: _____

Phone: _____

Date: _____

Worksheet #1 is Complete and Attached: ☐

Public Transportation Orientation

	YES	NO	NOT CLEAR
1. Does the operator concur with Worksheet #1, Question 1, as to the modes of public transportation that currently serve this site?	☐	☐	☐

Based on Adopted Plans:

2. Does the operator plan to provide fixed-route bus service to the site in the foreseeable future?	☐	☐	☐
3. If NO, does the operator plan to assist with rideshare or other non-fixed-route services?	☐	☐	☐

4. If YES for 2 and/or 3, describe the planned services: _____

_____

_____

Worksheet #2 – For Use by the Public Transportation Agency, continued

A. Land Use Compatibility

1. List any of the proposed uses that are incompatible with public transportation:[5]..... _____ _____ _____

2. Which if any of these create a major compatibility problem?..... _____

3. Is the development intensity sufficient to:

	YES	NO	NOT CLEAR
a. Sustain current levels of bus service in area ?.....	☐	☐	☐
b. Make bus service feasible in this area now ?.....	☐	☐	☐
c. Make future bus service possible in ____ years?	☐	☐	☐
d. Make it possible to improve service levels in this area?	☐	☐	☐
e. Support ridesharing, but not bus services?	☐	☐	☐

◆ Compatibility Measure A:

	Compatibility Measures			
For Question 3:			***Then score:***	0 ☐
If you answered no to:	(a-e)	No bus services can be provided		
If you answered yes to:	(e)	Rideshare is feasible		1 ☐
	(a, b, c)	Current service can be sustained/added		3 ☐
	(d)	Existing service levels can be improved		5 ☐

Total Worksheet #2 CM A Score: ☐

Add Worksheet #1 PTCI A Score: ☐

Your Rating Total A is: ☐

[5] A listing of compatible and incompatible land uses is provided in Chapter 3.

Worksheet #2 – For Use by the Public Transportation Agency, continued

B. Site Access

	YES	NO	NOT CLEAR
1. Does the operator concur with Worksheet #1, Question B 1, that the site is designed to be served by modes other than autos/trucks?	☐	☐	☐
a. Accessible by carpools/vanpools?	☐	☐	☐
b. Accessible by transit buses?	☐	☐	☐
c. Accessible by pedestrians?	☐	☐	☐
d. Accessible by bicycle?	☐	☐	☐
2. Is the projected volume of the trips to and from the site during weekday peak traffic periods going to negatively affect transit services? (Worksheet #1, Question B 2)	☐	☐	☐

◆ Compatibility Measure B:

Using Worksheet #1 Question B 2 and B 3:

	Compatibility Measures	Then score:	
Site-generated traffic will:	Negatively impact operations daily	0	☐
	Negatively impact operations to some extent daily	1	☐
	Negatively impact operations occasionally	3	☐
	Not impact operations	5	☐

Total Worksheet #2 CM B Score: ☐

Add Worksheet #1 PTCI B Score: ☐

Your Rating Total B is: ☐

Worksheet #2 – For Use by the Public Transportation Agency, continued

C. Site Design

Do you concur with Worksheet #1, Question C 1?:

	YES	NO	NOT CLEAR
1. Are buildings sited to facilitate access to existing or planned public transportation facilities?[6]	☐	☐	☐
2. Do the location and design of parking lots facilitate with pedestrian access to public transportation facilities?	☐	☐	☐
3. Have barriers (walls, major roadways, large landscaped areas) between buildings and the nearest transit facility been elimated?	☐	☐	☐
4. Are major building entrances visible from the nearest transit facility and direct routes to them clearly marked?	☐	☐	☐
5. Does the development provide all-weather pedestrian access between the public transportation facility and building entrances?	☐	☐	☐
6. Does the development provide shelters, benches and lighting for transit users?	☐	☐	☐
7. How far *in actual walking distance* will a transit rider walk to the public transportation facility from the buildings in this development?	_____ feet		
8. Comments:	_____		

♦ Compatibility Measure C:

For Questions 1-7:

6 Yes answers = 5 (High)
3 Yes answers = 3
0 Yes answers = 0 (Low)

Low ◆ ◆ ◆ ◆ ◆ ◆ High
0 1 2 3 4 5

Total PTC Indicator C Score: ☐
Your Rating Total C is: ☐

[6] Public transportation facilities include bus stops, transit centers, park-and-ride lots, ferry terminals, express bus and rail stations.

Worksheet #2 – For Use by the Public Transportation Agency, continued

D. Parking Management

	YES	NO	NOT CLEAR
1. Will the parking ratio that is required by the zoning ordinance permit public transportation to operate effectively at this site?	☐	☐	☐
2. Is the parking provided for rideshare vehicles truly preferential and adequate for the site?	☐	☐	☐
3. Will parking cost/volumes at the site encourage the use of public transportation?	☐	☐	☐

♦ Compatibility Measure D:

For Questions 1-3:

3 Yes answers = 5 (High)
2 Yes answers = 3
1 Yes answers = 1
0 Yes answers = 0 (Low)

Low					High
◆	◆	◆	◆	◆	◆
0	1	2	3	4	5

Total Worksheet #2 CM D Score: ☐
Add Worksheet #1 PTCI D Score: ☐
Your Rating Total D is: ☐

Worksheet #2 – For Use by the Public Transportation Agency, continued

E. Public Transportation Incentive Programs

	YES	NO	NOT CLEAR
1. Has the developer proposed/agreed to any incentive programs to reduce single occupant vehicle trips generated by this development?	☐	☐	☐
2. If YES, is the incentive program realistic and supported by adequate resources?	☐	☐	☐
3. If YES, does the operator agree with the incentive program rating (PTCI) given in Worksheet #1?	☐	☐	☐
4. If NO, would an incentive program be useful at this site?	☐	☐	☐
5. Has the developer established and maintained good incentive programs at other developments?	☐	☐	☐

♦ Compatibility Measure E:

	Compatibility Measures		
If you answered:	No incentive programs are proposed/viable	*then score:*	0 ☐
	A minimal program is proposed		1 ☐
	A minimal program is funded/established		2 ☐
	A good to excellent program is proposed		3 ☐
	A good to excellent program is established		4 ☐
	A good to excellent program is established and the developer has a good track record		5 ☐

Total Worksheet #2 CM E Score: ☐

Add Worksheet #1 PTCI E Score: ☐

Your Rating Total E is: ☐

Worksheet #2 – For Use by the Public Transportation Agency, continued

F. Summary

1. Public Transportation Compatibility Rating Summary
   (Add up the Rating Totals from sections A-E above.)

Total Rating A: ☐
Total Rating B: ☐
Total Rating C: ☐
Total Rating D: ☐
Total Rating E: ☐
Total Compatibility Rating: = ☐

2. Based on the Total Compatibility Rating above, how potentially compatible is this development with public transportation services and/or facilities in place, planned, or possible to develop for this location?

	Rating	Compatibility
If your total was:	0-10	Not Compatible
	11-20	Somewhat Compatible
	21-30	Generally Compatible
	31-40	Generally Very Compatible
	41-50	Highly Compatible in Every Aspect

Compatibility: _____

Worksheet #2 – For Use by the Public Transportation Agency, continued

F. Summary, continued

3. What elements need additional work to make them public transportation compatible?

- ☐ Land Use
- ☐ Site Access
- ☐ Site Design
- ☐ Parking
- ☐ Incentives

	YES	NO	NOT CLEAR
4. Will the site be served by any modes of public transportation?	☐	☐	☐
5. *If NO or NOT CLEAR,* is the site developer and jurisdiction aware of this?	☐	☐	☐

Comments:

_____

_____

_____

_____

_____

_____

_____

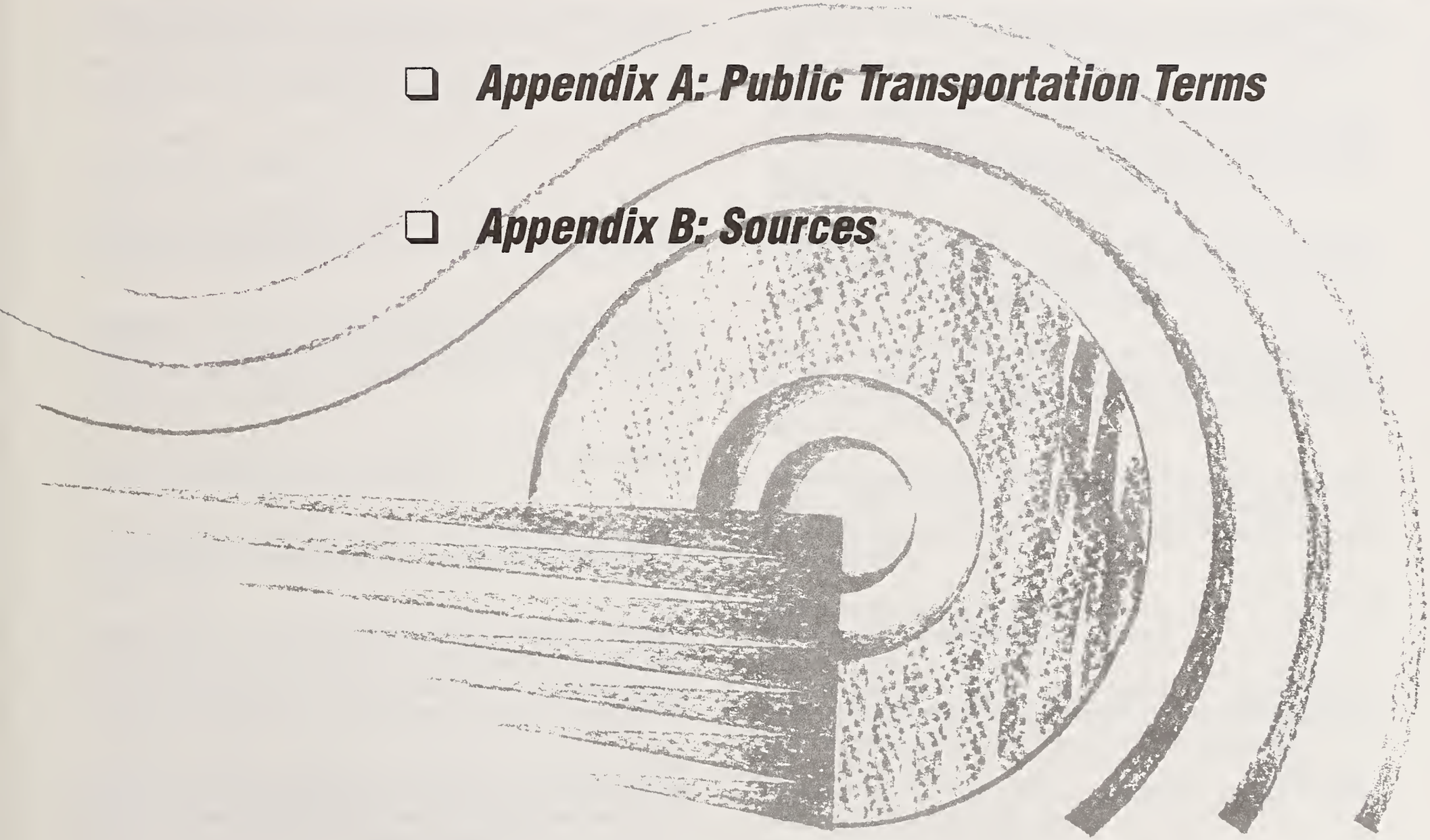
_____

_____

_____

Appendix

- ❑ **Appendix A: Public Transportation Terms**
- ❑ **Appendix B: Sources**



Appendix A: Public Transportation Terms

Alternatives Analysis To be eligible for UMTA capital funding for a major urban mass transportation investment (such as busways or rail), local officials must perform a corridor-level analysis of mode and alignment alternatives.

Articulated Bus Generally a 72-seat, 60-foot long bus designed to bend in the middle.

Automated People Mover (APM) APM refers to a class of small automated vehicles that operate without drivers on their own exclusive guideways.

Buspools Buses that operate like car or vanpools where the driver is an employee at the buspool's destination and all operating costs are borne by the users. They can also be called "worker/driver buses."

Busway A right-of-way for express bus operations completely separated from general purpose lanes.

Car/Vanpool A group of people who share the use and cost of a van or car for transportation to and from a destination on a regular basis.

Charter Service Transportation service provided in vehicles licensed to provide that service and engaged at a specific price for a specific period of time, usually on a contractual basis. Public transit agencies usually cannot provide charter services.

Commuter Rail A rail service usually using heavy rail vehicles, connecting the outlying suburbs and a central business district. Service is generally limited to longer distances (15 to 25 miles) and peak period, home-based work trips.

Commuter Service Peak-period bus or rail transportation provided on a regularly scheduled basis for work and school trips. Commuter services can be offered as express services.

County Transportation Authorities In Washington, county transportation authorities are authorized by state law (RCW 36.57). CTAs have been established in two Washington counties: Snohomish and Grays Harbor. SNO-TRAN is a CTA.

Demand Management A new concept of reducing auto trips through the management and pricing of parking, access, and congestion while providing alternatives.

Demand-Responsive Service Transportation service designed to carry passengers from their origins to specific destinations (often door-to-door) by immediate request or by prior reservation.

Development Impact Fees Fees collected for new development which are used to construct traffic improvements to accommodate the additional vehicular traffic generated by new development.

Dual-Mode Bus Buses that can operate with electrical and diesel power; e.g. METRO's tunnel buses.

Express Service Higher speed transit service designed to make a limited number of stops along a route and generally provided during peak hours by express buses or trains.

Feeder Service Bus services providing connections with other bus or rail transit services.

Appendix A: Public Transportation Terms, continued

"Ferry Fast Lanes" Priority loading lanes for car/vanpools at ferry docks, designed to encourage HOV use on the ferries. Users must have a permit to use this service.

Fixed-Route Service Transportation service operated over a set route on a regular schedule.

Grade-Separated Rights-of-way that are separated from general purpose rights-of-way by a level change, often on an elevated structure or in a tunnel.

Guideway An exclusive travel-way used by various modes of public transportation.

Headway The frequency of transit service along a given route.

Heavy Rail A rail system that operates on a completely grade-separated right-of-way. Generally trains operate longer distances, with limited stops, and in heavily-populated urban corridors.

"Hero Program" A program promoting proper use of HOV lanes.

High Capacity Transit (HCT) Transportation systems designed to carry large numbers of riders at faster than average speeds. Examples include express bus, passenger-only ferries, and rail.

High Occupancy Vehicles (HOV) Vehicles that carry multiple occupants. HOVs include buses, vanpools, and carpools. HOV vehicles can use **HOV Lanes** which are reserved for buses, carpools, and vanpools on freeways, highways, and city arterials.

Integrated Transportation System A concept to expand mobility and provide transportation choices by integrating transportation facilities and services appropriate to the land uses in an area; e.g. putting HOV lanes on transit-accessible roads serving high density developments.

Level of Service (LOS) A qualitative measure describing operational conditions within a traffic stream in terms of speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Level A denotes the best traffic conditions while Level F indicates gridlock.

Light Rail Transit (LRT) A rail system that can operate on a variety of rights-of-way, ranging from on-street to grade-separated. Vehicles run on rails and consist of shorter train units than heavy rail.

Local Bus Service Community-based transit services provided to the residents of a defined area.

Local Transportation Act (LTA) LTA was created in 1987 by House Bill 817 and established tools to collect and distribute development impact fees along with public funds to pay for roadway improvements.

Mass Transit The general term used to identify bus, rail, or other types of transportation service which move large numbers of people at one time.

Metered/Bypass Ramp Entrance ramps metered to allow traffic to merge onto the freeway, but designed to allow HOVs to bypass the ramp meters. In Washington, the ramp meter program is called the "FLOW program."

Appendix A: Public Transportation Terms, continued

Mini Bus Buses smaller than the standard 40-foot long coach with varying seating capacities.

Modal Split The proportion of total person trips on various types of modes.

Mode The types of transportation available for use such as rail, bus, vanpool, single-occupant auto, or bicycle.

Multi-Modal A term referring to facilities designed for and used by more than one type of mode.

Paratransit Flexible transportation services which are operated publicly or privately, and generally are distinct from conventional transit. Vans and mini-buses are the usual paratransit vehicles.

Park-and-Ride Facility A designated parking lot at or near a transit facility used by transit patrons to park their cars.

Parking Management Actions taken to alter the supply, operation, and/or parking demand in an area.

Peak Periods The hours when traffic is greatest. Generally, there is a morning peak (6:30-9:00am) and an afternoon peak period (3:30-6:30pm) during the work week.

Preferential Parking Parking spaces reserved exclusively for car/vanpools in parking lots. These parking spaces are generally located closer to building entrances or have other positive features which make them very desirable. Such parking spaces may be used as an incentive to encourage ridesharing.

Preferential Signals Traffic signals designed to give an advantage to HOVs.

Primary Corridors The major travel routes identified for additional development to increase the carrying capacity of those corridors.

Public Transportation A wide variety of passenger transportation services available to the public including buses, ferries, rideshare, and rail transit. In Washington, public transportation is provided by PTBAs, CTAs, cities, the State, and METRO.

Public Transportation Benefit Authority (PTBA) Public Transportation Benefit Authorities are authorized by RCW 36.57A to provide public transportation to areas which vote to create them. Sixteen PTBAs operate transit services in Washington. Community Transit is a PTBA.

Rail-Compatible Facilities designed for buses or other uses that are, or can be made, compatible with rail facilities; e.g. park-and-ride lots.

Rail-Convertible Facilities designed for buses or other uses that can be converted to rail facilities at a later time; e.g. the METRO bus tunnel can be converted to a rail facility.

Rail Transit Any of a variety of passenger rail modes used for multi-purpose trips. Rail transit usually operates all day and serves more than the commuter market.

Regional Rail System The term given to the approximately 101-mile rail transit system proposed for King, Pierce and Snohomish counties. This system would be part of the larger, high capacity transportation system being developed for this region.

Reverse Commute Travel during the peak period that flows in the direction opposite the peak direction.

Appendix A: Public Transportation Terms, continued

Ridership The number of persons using a transportation system. Can be expressed in any number of measurements.

Ridesharing Programs Any programs sponsored by public agencies or the private sector to promote the use of carpools, vanpools, or buspools.

Right-of-Way A general term denoting land or an interest therein, usually in a strip, devoted to transportation purposes.

Route An established geographical course of travel followed by a vehicle from start to finish for a given trip.

Section 9 The major federal funding source for public transportation which is one section of the Surface Transportation Act.

Section 13(C) Labor regulations, mandated by the U.S. Department of Labor, designed to protect transit employees working in federally funded systems.

Section 15 U.S. Department of Transportation reporting requirements for transit operators. These reports are the basis for the national allocation of Section 9 funds.

Section 504 Federal regulations that mandate levels of service to physically disabled people that are to be provided by transit.

Service Area A geographic locale or region where transit service is provided.

Shared-Ride Taxi A demand-responsive mode in which taxis carry several unrelated passengers with different, but similar, origins and destinations.

Single-Occupant Vehicle (SOV) Vehicles carrying one occupant, usually a private auto.

Special Transportation Publicly or privately provided transportation services to elderly and/or disabled people or other "special" populations.

Station Area An area surrounding an HCT station containing transit related activities and designed to accommodate large numbers of people using the HCT service. Station areas are generally defined as the area within a 1/4 mile radius of the station.

Subscription Bus A bus service in which routes and schedules are prearranged to meet the travel needs of specific riders - usually workers at a single destination. The level of service is generally higher than that of regular passenger bus service, and the service is obtained by contractual arrangements. Passenger fares generally cover all operating costs. Also called "custom bus."

Subsidized Taxi A service which lowers taxi fares to the general public or to special groups. The taxi company is reimbursed for the difference between the total taxi fare and the reduced amount paid by the rider.

Surface Transportation Act of 1987 The law (Pub L.100-17) updating the federal financing program for public transportation planning, capital programs, and transit operations. Key sections include 9 (categorical transit grants), 3 (discretionary grants) and 8 (research and development).

Appendix A: Public Transportation Terms, continued

Timed Transfer Concept A set of bus routes and schedules coordinated so that transfers between all lines, destined for a particular transit center, are synchronized to save passengers' time.

Transit A general term applied to passenger rail and bus service available for use by the public and generally operated on fixed-routes with fixed-schedules.

Transit Center A facility providing connections between buses serving different routes or between different transportation modes such as between ferries and buses.

Transit-Compatible/Supportive Land Use A general term applying to higher density and/or intensity land uses and activities, usually urban, that are designed and located to encourage ridership on public transportation.

Transit Corridor A major right-of-way that carries high volumes of transit and other HOV vehicles.

Transit Dependent People for whom public transit is the only transportation mode available.

Transit Freeway Stations Special bus stops designed into the freeway right-of-way that allow buses to pick up and deliver passengers without leaving the freeway, thus saving travel time. These are also called "flyer stops."

Transit/Vanpool Ramps Ramps exclusively used by buses, carpools and vanpools to enter the freeway.

Transportation Brokerage The coordination of a variety of transportation services by a broker. Generally the broker is a private business often under contract with transit agencies.

Transportation Demand Management (TDM) / Transportation System Management (TSM) These techniques increase the efficiency of the existing transportation system through lower cost programs like ride sharing, bus fare subsidy programs, parking management and flextime.

Transportation Improvement Board (TIB) The TIB was created by House Bill 1857 in 1988 to replace the Urban Arterial Board. TIB will oversee planning, funding, and the coordination of transportation projects between jurisdictions.

UMTA The Urban Mass Transportation Administration, the division of the U.S. Department of Transportation responsible for the funding and regulation of public transportation. UMTA administers the Surface Transportation Act of 1987 which is a major transit funding source (see Surface Transportation Act).

WSDOT The Washington State Department of Transportation responsible for planning, building, and maintaining the state highways and ferry system.

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