U.S. Department of Transportation
Office of the Secretary of Transportation

The Coordination of Parking with Public Transportation and Ridesharing

June 1982

An Urban Consortium Information Bulletin

Urban Consortium

for Technology Initiatives

Urban Consortium for Technology Initiatives

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The Urban Consortium for Technology Initiatives was formed to pursue technological solutions to pressing urban problems. The Urban Consortium is a coalition of 37 major urban governments, 28 cities and 9 counties, with populations over 500,000. These 37 governments represent over 20% of the nation's population and have a combined purchasing power of over $25 billion.

Formed in 1974, the Urban Consortium represents a unified local government market for new technologies. The Consortium is organized to encourage public and private investment to develop new products or systems which will improve delivery of local public services and provide cost-effective solutions to urban problems. The Consortium also serves as a clearinghouse in the coordination and application of existing technology and information.

To achieve its goal, the Urban Consortium identifies the common needs of its members, establishes priorities, stimulates investment from Federal, private and other sources and then provides on-site technical assistance to assure that solutions will be applied. The work of the Consortium is focused through 10 task forces: Community and Economic Development; Criminal Justice; Environmental Services; Energy; Fire Safety and Disaster Preparedness; Health; Human Resources; Management, Finance and Personnel; Public Works and Public Utilities; and Transportation.

Public Technology, Inc. is the applied science and technology organization of the National League of Cities and the International City Management Association. It is a nonprofit, tax-exempt, public interest organization established in December 1971 by local governments and their public interest groups. Its purpose is to help local governments improve services and cut costs through practical use of applied science and technology. PTI sponsors the nation's local government cooperative research development, and technology transfer program.

PTI's Board of Directors consists of the executive directors of the International City Management Association and the National League of Cities, plus managers and elected officials from across the United States.

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Prepared by
PUBLIC TECHNOLOGY, INC.
1301 Pennsylvania Avenue, NW
Washington, D.C. 20004

Secretariat to the
URBAN CONSORTIUM FOR TECHNOLOGY INITIATIVES

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PREFACE

This is one of ten bulletins in the fifth series of Information Bulletins produced by the Transportation Task Force of the Urban Consortium for Technology Initiatives. Each bulletin in this series addresses a priority transportation need identified by member jurisdictions of the Urban Consortium. The bulletins are prepared for the Transportation Task Force by the staff of Public Technology, Inc. and its consultants.

Ten newly identified transportation needs are covered in this fifth series of Information Bulletins. In priority order they are:

- Growth Management and Transportation
- Intercepting Downtown-Bound Traffic
- Inflation Responsive Transit Financing
- Impact of Traffic on Residential Areas
- Coordination of Parking with Public Transportation and Ridesharing
- Improved Railroad Grade Crossings
- Flexible Federal Design Standards for Highway Improvements
- Traffic Signal Maintenance
- Inflation Responsive Financing for Streets and Highways
- Flexible Parking Requirements

The needs highlighted by Information Bulletins are selected in an annual process of needs identification used by the Urban Consortium. By focusing on the priority needs of member jurisdictions, the Consortium assures that resultant research and development efforts are responsive to local government problems.

Each bulletin provides a nontechnical overview, from the local government perspective, of issues and problems associated with each need. Current research efforts and approaches to the problem are identified. The bulletins are not an in-depth review of the state-of-the-art or the state-of-the-practice. Rather, they serve to identify and raise issues and as an information base from which the Transportation Task Force selects topics that require a more substantial research effort.

The Information Bulletins are also useful to those, such as elected officials, for whom transportation is but one of many areas of concern.

The needs selection process used by the Urban Consortium is effective. Priority needs selections have been addressed by subsequent Transportation Task Force projects:

- To facilitate the provision of transportation services for elderly and handicapped people, five products have been developed: Elderly and Handicapped Transportation: Chief Executive's Summary, Elderly and Handicapped Transportation: Planning Checklist, Elderly and Handicapped Transportation: Information Sourcebook, Elderly and Handicapped Transportation: Eight Case Studies.

- To help improve center city circulation (with the objectives of downtown revitalization and economic development) several projects have been completed. A summary report on Center City Environment and Transportation: Local Government Solutions shows how 7 cities use transportation and pedestrian improvements as tools in downtown revitalization. A report titled Center City Environment and Transportation: Transportation Innovations in Five European Cities discusses exemplary approaches to resolving traffic management problems common to cities with large numbers of automobiles. Another project, addressing the coordination of public transportation investment with real estate development, has culminated in two major national conferences--the Joint Development Marketplaces I and II. The second Marketplace, held in Washington, DC, in July 1980, was attended by a total of over 500 people, including exhibitors from 32 cities and counties and representatives of private development and financial organizations.

- A series of documents relating to the need for Transportation Planning and Impact Forecasting Tools has been prepared: (1) a management-level document for local officials describing manual and computer transportation planning tools available from the U.S. Department of Transportation, (2) a series of case studies of local government and transit agency applications of these tools, and (3) a guide describing ways local governments can gain access to these tools.

- To meet the need to promote the use of Transportation System Management (TSM) measures, a series of five regional meetings was held in 1980 to provide local, State, and Federal officials, and representatives of transit agencies and the business community with the opportunity to exchange information about low-cost TSM projects to improve existing transportation systems.

- To facilitate the dissemination of information on local experiences in Parking Management, a technical report describing the state-of-the-art has been prepared.

- To address the need for information on transit productivity, a seminar on International Transit Performance Measurement was held in September 1980. The seminar included presentations on the state-of-the-art in France, Germany, and the United States. The seminar was co-sponsored by the German Marshall Fund of the United States.

- To encourage improved design in transportation facilities, PTI organized Design for Moving People, the first national conference to bring together leading design professionals--architects, artists, arts administrators--and those responsible for operating and managing many of the nation's largest public mass transportation systems. The meeting was held in May 1981 in New York. Cosponsored by the American Public Transit Association (APTA), the New York Chapter of the American Institute of Architects, AMTRAK, and the Municipal Art Society of New York, the two day conference featured keynote addresses by two of the country's leading architects, case studies, and practical workshops on topics such as financing design excellence, promoting better collaboration between architects and artists, and materials selection--vandalism and maintenance.

- To address the issue of adequate financing for transit and the difficult policy decisions facing operating authorities regarding fare setting and the role fares should play in meeting financial needs, the Urban Mass Transportation Administration (UMTA) and the American Public Transit Association (APTA) sponsored a fare policy seminar, with the help of PTI, for general managers and board members in Region III. The seminar was held in Washington, D.C. in September 1981, at APTA's offices. Consulting experts presented the results of relevant research sponsored by UMTA's Office of Service and Methods Demonstrations.

- To test the effectiveness of the video teleconference as a means of communicating information to local officials quickly and efficiently and to address the need to find less costly alternatives to fixed route transit, PTI organized and staffed a successful teleconference under UMTA sponsorship in 1982. Entitled "Adjusting to Reduced Transportation Budgets: Operational Strategies," the teleconference provided local officials in five cities with information about alternative transportation services suitable for areas where conventional transit service is either impractical or unduly expensive.

Task Force information dissemination and technology sharing concerns are currently addressed by three products--SMD Briefs, Transit Actions and Transit Technology Briefs. SMD Briefs are short reports that provide up-to-date information about specific aspects of on-going projects of UMTA's Office of Service and Methods Demonstrations (SMD). In addition, the SMD HOST Program allows transportation officials from selected jurisdictions to visit one of these projects for on-site training. Transit

Actions cover the on-going projects of UMTA's Office of Transportation Management. Each Action provides timely information that will be especially useful to transit managers concerned with improving their transit systems' efficiency and effectiveness. Transit Technology Briefs report on projects sponsored by UMTA's Office of Technology Development and Deployment. These timely documents provide information that should be of direct benefit in the improvement and productivity of transit system operations.

Additional Technology Sharing occurs through the National Cooperative Transit Research Program (NCTRP) which was organized jointly by Public Technology, Inc., the American Public Transit Association, the Urban Mass Transportation Administration, and the Transportation Research Board to address problems relating to public transportation identified by local and State government and transit administrators.

The support of the U.S. Department of Transportation's Technology Sharing Division in the Office of the Secretary, Federal Highway Administration, National Highway Traffic Safety Administration, and Urban Mass Transportation Administration has been invaluable in the work of the Transportation Task Force of the Urban Consortium and the Public Technology, Inc. staff. The guidance offered by the Task Force members will continue to ensure that the work of the staff will meet the urgent needs identified by members of the Urban Consortium for Technology Initiatives.

The members of the Transportation Task Force are:

- George Simpson (Chairperson)
  Assistant Director
  Department of Engineering
  and Development
  City of San Diego
  San Diego, California

- Gerald R. Cichy
  Director of Transportation
  Montgomery County
  Rockville, Maryland

- Kent Dewell
  Deputy Director, Public Works
  Department/Transportation
  Division
  City of San Jose
  San Jose, California

- David Gurin
  Deputy Commissioner
  New York City Department of
  Transportation
  New York, New York

- Edward M. Hall (Vice Chairperson)
  Street Transportation
  Administrator
  City of Phoenix
  Phoenix, Arizona

- William K. Hellmann
  Chief, Interstate Division
  for Baltimore City
  Baltimore, Maryland

- Rod Kelly
  Director, Office of
  Transportation
  City of Dallas
  Dallas, Texas

- Frank Kiolbassa
  Director of Public Works
  City of San Antonio
  San Antonio, Texas

- Alan Lubliner
  Center City Circulation
  Project Manager
  Department of City Planning
  City of San Francisco
  San Francisco, California

- Jim Parsons
  Chief Transportation Planner
  Office of Policy and Evaluation
  City of Seattle
  Seattle, Washington

- Julie Sgarzi
  Director of Research
  Mayor's Office
  City of Los Angeles
  Los Angeles, California

- Stephen Villavaso
  Chief Planner, Transportation
  Policy Development
  Mayor's Office
  City of New Orleans
  New Orleans, Louisiana

Project Sponsors

- Jim Bautz
  Chief, Transit Services
  Division, Office of
  Service and Management
  Demonstrations
  Urban Mass Transportation
  Administration
  U.S. Department of Transportation
  Washington, D.C.

- Peter Benjamin
  Associate Administrator,
  Technical Assistance
  Urban Mass Transportation
  Administration
  U.S. Department of Transportation
  Washington, D.C.

- Brian Cudahy
  Director, Office of Capital and
  Formula Assistance
  Urban Mass Transportation
  Administration
  U.S. Department of Transportation
  Washington, D.C.

- Frank Enty
  Chief, Management Division
  Office of Service and
  Management Demonstrations
  Urban Mass Transportation
  Administration
  U.S. Department of Transportation
  Washington, D.C.

- Ronald J. Fisher
  Director, Office of Service and
  Management Demonstrations
  Urban Mass Transportation
  Administration
  U.S. Department of Transportation
  Washington, D.C.

- Charles Graves
  Director, Office of Planning
  Assistance
  Urban Mass Transportation
  Administration
  U.S. Department of Transportation
  Washington, D.C.

- Phil Hughes
  Chief, Information Staff
  Urban Mass Transportation
  Administration
  U.S. Department of Transportation
  Washington, D.C.

- Douglas Kerr
  Chief, Program Guidance Division
  Office of Capital and Formula
  Assistance
  Urban Mass Transportation
  Administration
  U.S. Department of Transportation
  Washington, D.C.

- Alfonso B. Linhares
  Director, Office of Technology
  and Planning Assistance
  Office of the Assistant Secretary
  for Governmental Affairs
  U.S. Department of Transportation
  Washington, D.C.

- Norm Paulhus
  Office of Technology and Planning
  Assistance
  Office of the Assistant Secretary
  for Governmental Affairs
  U.S. Department of Transportation
  Washington, D.C.

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Chapter 1

ISSUES AND PROBLEMS

Coping with traffic congestion in urban areas and in major employment centers is a challenge for local government officials in most cities. Controlling the number of vehicles that enter a city and downtown vehicle congestion is particularly difficult in those communities where transit ridership is low, suburban sprawl is widespread, and a large amount of parking is available. There has been increased recognition at all levels of government that a partial solution to peak period traffic congestion, which places the greatest burden on the urban transportation system, is the coordinated management of the growth in demand for the use of transportation facilities and services. Demand management attempts to offer commuters an alternative to driving alone through:

- Ridesharing--including carpools, vanpools, and privately leased buses. About 26 million Americans commute to work by one of these modes daily.

- Public Transit--including bus and fixed rail transportation services that are available to the general public. Over five million Americans travel by these modes daily.

- Parking Policy--managing the quantity, location, cost, and availability of parking to improve the operation of a jurisdiction's parking system.

Coordination of parking policies with public transportation and ridesharing, however, often does not take place. To a large degree, this is due to the widespread belief on the part of local officials that changes in parking policies that reduce traffic congestion will reduce both the number of people entering the city and the level of business or retail activity. Few attempts have been made to evaluate the effectiveness of parking strategies or to examine the interrelationships between parking controls and supporting transportation policies, such as:

- Improved transit service.

- Staggered work hours.

- Priority treatment lanes for high-occupancy vehicles.[1]

Other factors, such as control over parking, transit, and ridesharing spread among a number of agencies, authorities, and offices make reaching critical management decisions difficult.

Public and business opposition is another critical factor that impedes the coordination of parking with public transit and ridesharing. Merchants, employers, and employees traditionally resist changes in the status quo, such as those

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[1] Virginia Highway and Transportation Research Council, Evaluation of Parking Management Strategies for Urban Areas, p. xiii.

that would result from the imposition of a parking construction freeze, for example. Merchants are leery of any changes in municipal parking supplies that they feel would reduce their competitive position with other retailers who offer free customer parking. Employers and employees often resist changes because parking is a part of an overall benefits package. The coupling of parking controls with simultaneous efforts to supply alternative transportation services might mitigate these perceived negative effects.

There are, however, four practical considerations that have influenced officials in some cities to call for the development of policy coordination mechanisms and procedures that would enhance the effectiveness of all three (parking, transit, and ridesharing) policies. The four considerations are:

- Auto ownership continues to increase. Automobile ownership has increased at a rate of 2.5 times the population growth rate during the past two decades.

- Structured parking is becoming prohibitively expensive. Construction costs of parking have reached as high as $11,000 a space for subterranean development on clear land and $14,000 a space for construction beneath a building. Figures are higher when maintenance costs are taken into account.

- Federal operating assistance for the transit industry is scheduled to be phased out by 1985.

- Urban freeway construction is extremely expensive and is widely perceived to be environmentally disruptive.

Local governments may choose to coordinate parking with public transportation and ridesharing programs to deal with the growing number of vehicles on the road, the replacement of parking by more appropriate uses of urban land, and the reduction, and possible elimination, of highly subsidized commuter transit service from the suburbs to the city. Public transportation and ridesharing policies can complement parking policies. For example, parking policies such as preferential parking for carpools and vanpools can increase the attractiveness of ridesharing where no adequate public transportation exists or where a further increase in public transit requires a disproportionate investment.

This Information Bulletin examines parking policies that act as incentives to high occupancy vehicle travel, especially for commuter work trips. The report will discuss the following:

- Parking Incentives to Increase Ridesharing.

- Parking Incentives to Increase the Use of Public Transit.

- Alternative Transportation Assistance Programs.

- Bicycle Parking.

A listing of Federal, State, and local contacts, and brief descriptions of parking programs that may be applicable to other urban areas are also provided.

PARKING INCENTIVES TO INCREASE RIDESHARING

Several parking programs can be used to induce commuters to use high occupancy vehicles for the work trip. Examples of incentives that increase vehicle occupancy include preferential parking for high occupancy vehicles, free or low-cost parking for carpools and vanpools, and differential price structures based on vehicle occupancy. Preferential parking and reduced parking rates for carpoolers and vanpoolers are strategies widely used by both the public and private sectors. Charging differential parking rates based on vehicle occupancy, however, is a new parking management tactic that has had limited application to date in either sector.

Preferential Parking for High Occupancy Vehicles

Reserving parking spaces for high occupancy vehicles is a popular method for encouraging carpooling and vanpooling and for reducing parking demand at employment sites where there is a deficiency in the number of available parking spaces. The purpose of this strategy is to increase the utilization of existing parking spaces without adding to the existing parking supply.

Any one of the following measures can be used to enhance the convenience of parking for carpools and vanpools.

- Guaranteeing spaces for carpools and vanpools where parking is scarce.
- Assigning the closest and most convenient spaces to carpools and vanpools.
- Assigning specific garage spaces for carpools and vanpools.

When applied on an areawide basis, preferential parking can reduce the demand for long-term commuter parking, thereby freeing additional spaces for non-work trip purposes such as shopping.

Preferential Parking as Part of New Development

New industrial, commercial, and office developments can reduce their parking requirements by setting aside parking spaces for high occupancy vehicles during site planning. The option of providing designated HOV spaces in lieu of a percentage of the parking required by city code or ordinance offers developers flexibility in meeting minimum parking requirements while increasing ridesharing.

The City of Sacramento plans to offer this option to developers of new retail and office structures in a commercial zone (C-3) within the central business district. The parking requirement, which has been endorsed but not yet approved by the Sacramento City Planning Commission, will permit

developers to eliminate 2.5 parking spaces for every designated carpool space. The revised parking requirement would allow up to 15% of the total parking spaces required for structures in C-3 zones to be replaced by carpool stalls.

Free or Low Cost Parking

Free or low-cost parking for high occupancy vehicles can be implemented by local governments to encourage ridesharing. Seattle, Washington, and Portland, Oregon have reduced parking costs for carpools and vanpools at conveniently located on-street spaces in the central business district.

In Seattle, carpools of three or more persons can be registered in the City's carpool program for a $5 monthly fee. The City then issues a permit which entitles the carpoolers to park in any one of 615 designated carpools spaces in downtown Seattle. The $5 fee covers all maintenance and overhead costs.

In Portland, each member of carpools of three or more persons must apply to purchase a monthly carpool permit for $25. Vehicles displaying the permit can park at any of the City's 2,615 six-hour parking meters on an unlimited basis, without paying the hourly fee.

Parking discounts for carpoolers, however, may not lead to significant reductions in congestion or other traffic-related problems in downtown areas. A recent survey of factors that influence mode choice among carpoolers in Seattle, showed that more transit riders than single-occupant auto drivers joined carpools as a result of parking discounts.[2] The survey indicated that:

- A significant increase in carpool formation occurred when parking discounts were offered, and 62% of the carpoolers surveyed were new carpoolers.

  --Of the new carpoolers, 35% had previously been in single-occupant automobiles.

  --However, 65% of the new carpoolers previously took public transit.

Further study is needed to determine whether these findings are unique to the Seattle area.

Experience with reduced parking fees for high occupancy vehicles in the private sector is limited. The Prudential Insurance Company in Boston reports that at least 34% of their employees shifted to carpools when a $2.50 a day parking fee was dropped for vehicles with three or more occupants. In many cases, free parking for carpools and vanpools is offered instead of discounted parking fees.

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2 M. Olsson and G. Miller, Parking Discounts and Carpool Formation in Seattle (Washington, D.C.: Urban Institute, 1978).

Acceptability. In a study of commuter attitudes in Southern California, strategies such as carpool matching, park and ride lots, company cars for pooling, income tax rebates, and carpool parking subsidies were preferred over preferential parking for carpools.[3]

Institutional or Legal Barriers. While preferential parking may be generally acceptable to the public, specific labor unions and employee associations may oppose this strategy because it is a benefit that is given to selected employees.

Owners or operators of office buildings with numerous tenants may oppose this strategy because they receive no tangible benefit. Some executives may fear that the preferential parking they now receive may be usurped by this type of strategy.

Differential Parking Rates Based Upon Vehicle Occupancy

Parking rates can be designed to decrease as vehicle occupancy increases. Alternatively, the rates may remain unchanged, but employers may provide a subsidy that varies according to vehicle occupancy. An example of this type of differential parking rate that has been applied by some private firms is shown below.

	Percentage of Parking Price Paid for by Employer
Single Occupant	0%
Two-person carpool	50%
Three-person carpool	100%
Vanpool	100%

In most cases, high occupancy vehicles will also receive preferential parking spaces. Several companies in southern California have successfully adopted this approach to ridesharing.[4]

PARKING INCENTIVES TO INCREASE THE USE OF PUBLIC TRANSIT

Downtown parking demand and vehicle traffic can be reduced by locating parking facilities in outlying suburban areas and in peripheral locations. The development of park and ride lots and peripheral or intercept parking is commonly used to reduce current downtown parking demand and to lessen the need for future increases in downtown parking supply. Park and pool lots can be used for carpool staging. Park and ride lots and park and pool facilities require little administration or maintenance funding. In many cases, park and ride lots have become unofficial staging points for carpools, although transit agencies do not universally accept carpool formation as one of their functions.

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3 Carpool Incentives: Evaluation of Operation Experience, Conservation Paper, No. 44 (Washington, D.C.: U.S. Federal Highway Administration, 1976), p. 99.

4 City of Los Angeles, Parking Management Program, August 1981.

Fringe Parking

This strategy reallocates the supply of parking from the city center to outlying areas, thus eliminating the need to provide parking in the city. The automobile is used for primary collection in low density residential areas and then left at a remote lot. Express bus, rapid transit, or shuttle service is then used to replace the automobile for the line haul and downtown distribution portions of the trip.

Land adjacent to transit stations, bus terminals, or along established travel corridors is suitable for this type of suburban interchange parking area. Because identifying an appropriate lot location is often a complex task, local government and transit officials may prefer to use existing parking facilities at churches, community centers, and shopping centers rather than build a new parking facility. Many times, this method can save a considerable amount of money. In Seattle, the park and ride network of 1,500 spaces is administered for under $30,000 a year, including all lease and insurance costs. The City estimates that it would cost $2 million to build one 500-stall park and ride lot on undeveloped land.

Several factors that may diminish the value of joint-use park and ride lots should be carefully analyzed prior to establishing a fringe parking facility. They include:

- Conflict between potential park and ride patrons and other users.
- Local environmental concerns.
- Existing traffic and travel hazards.

The latter two considerations are important in the construction of new fringe parking facilities as well.[5]

Beyond lot location, two other factors are of concern to cities planning to develop a park and ride facility. Who should operate the route: the city, the transit authority, or private carriers? Should new equipment be purchased or can existing equipment be utilized? The City of St. Paul, Minnesota has capitalized on two of the less obvious options. The City has established and will expand its free shuttle service to the city center from three fringe parking facilities that have a total of 3,000 spaces. At present, five 44-passenger, specially painted school buses are chartered annually from a private operator. The present service carries over 1600 riders a day and service is provided during morning and evening peak periods. The annual contract for the shuttle system is approximately $190,000. One quarter of the shuttle's operating funds are derived from parking lot revenues. The daily parking rates are $1.00 or $1.50, depending upon the location of the facility. Downtown parking meter revenues account for the remainder of the funds.

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[5] For a complete discussion of intercept parking, see the companion 1981 PTI Information Bulletin, Intercepting Downtown-Bound Traffic.

Off-Site Substitute Parking

The substitution of parking spaces at less expensive, remote locations for currently required on-site parking is a new type of parking strategy under consideration in a number of cities. Through the use of this strategy, developers of commercial, industrial, and governmental projects are encouraged to purchase parking spaces at remote facilities in exchange for a waiver on the corresponding number of required on-site parking spaces. The development cost of remote parking is very often significantly lower than the development cost of parking spaces in built-up urban areas.

The success of this strategy rests heavily upon the ability of the city, the developer, the employer, and the transportion authority to provide transportation service that will connect the remote parking facility with the activity center or work site.

Substitute parking can be implemented under the same procedures that are used for off-site parking. The only significant change is that a shuttle or some other transportation mode must be provided to guarantee the use of the remote lot by employees from the employment site and that compliance be periodically monitored. Subscription bus service may be provided by a transit agency, or free shuttle service, such as that provided by Atlantic City casino owners for their employees, may be arranged.

Atlantic City, New Jersey, is an island that can be reached only by car or charter bus. There is no public transit to the island. Casino development has placed a severe strain on the City's parking facilities. The construction of new parking facilities is limited by the State coastal zone management plan, which places a ceiling on the number of on-site parking spaces a hotel along the boardwalk can provide at one space per room. Coastal regulations also discourage the development of off-site parking along the major transportation corridors. The plan requires a casino to institute a park and ride program for casino employees as a condition of the casino's building permit. Several casinos presently operate intercept parking lots and provide free shuttle service for their employees; other casinos are expected to begin operation of similar services and facilities in the near future.

The Atlantic County Transportation Authority, the regional coordinator of transportation service in Atlantic County, is working with the casinos on expanding the park and ride program and the free shuttle service to casino visitors. The Authority is developing alternative transportation and parking plans that would extend intercept parking lots to areas of Atlantic County served by regional public transit, provide free monthly bus passes for employees and subsidized fares for visitors using intercept lots, and promote ridesharing.

Acceptability. Parking substitution requires a change of mode, and this increases travel time. Commuters sometimes have to drive outside of the direct route to their work site to the parking area, and, once they have transferred to another mode, may find themselves retracing their paths. If travel time is to be decreased, the substitute parking lots should be located a sufficient distance from the work site to make the mode change worthwhile in terms of total travel time for all passengers.

ALTERNATIVE TRANSPORTATION ASSISTANCE PROGRAMS

Many employers have instituted alternative transporation assistance programs for their employees. These programs are partially or wholly subsidized by employers for a number of reasons including a sense of responsibility to promote energy conservation, a desire to reduce the costs of maintaining current parking arrangements, and the need to eliminate new parking construction.

Flexible Transportation Subsidies

The most common way employers equalize their support for employees who commute to work is through the use of flexible transportation subsidies. Flexible transportation subsidies are inducements offered by employers to encourage employees to commute to work by transit, carpool, vanpool, or buspool instead of driving alone. The subsidies encourage the use of high occupancy vehicles while reducing parking demand at the employment site.

A reversal of past practices in which employers subsidized auto users by providing free parking, flexible transportation subsidies typically are offered by employers with the following characteristics:

- A sizable work force in the central business district of a metropolitan area.
- Limited employee parking facilities.
- Available transit service that has additional capacity.

The elimination of free employee parking is the first step toward discouraging single-occupant vehicle trips. There are several ways to eliminate single-occupant vehicle parking subsidies:

- Increase employee pay commensurate with former parking subsidy.
- Create alternative transportation fringe benefits for employees (e.g.subsidies for carpools, vanpools, subscription bus service and public transit bus passes).
- Eliminate the parking subsidy for new employees, while increasing their salaries by a corresponding amount.
- Provide less employee parking and charge full prices for parking as new company facilities are built or leased, with a complementary increase in transportation fringe benefits.[6]

A recent survey of employers in Seattle, Los Angeles, Washington, D.C., and Hartford, Connecticut, was conducted by the Southern California Rapid Transit District to determine the advantages gained by employers who offer

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[6] City of Los Angeles, Parking Management Program, p. 59.

flexible transportation subsidies, in this case, bus passes.[7] Firms participating in employer subsidized transit pass programs cited the following advantages:

- Control of employee parking costs. In most cases, it is cheaper for an employer to pay for all or part of an employee's bus pass than to build and maintain a new parking space or to pay for employee parking at a private lot.

- Recruitment value. Employers in central business districts of metropolitan areas have found subsidized bus passes attract employees to downtown work sites.

- Tax advantages. Subsidized bus passes are regarded as a cost of doing business that results in a tax deduction.

- Improved employer image. Employee morale is improved when employers take an active role in reducing transportation costs for employees. Participating employers also receive favorable news media coverage when they are identified as contributing to energy conservation, air pollution control, and reduced traffic congestion.

Atlantic Richfield Program

One of the most successful alternative transportation programs in the country has been initiated by the Atlantic Richfield Company (ARCO), which has its corporate headquarters in downtown Los Angeles. In this instance, ARCO subsidizes all transportation modes for its 3000 employees. Employees are given the option of commuting alone and paying $40 of the $80 monthly parking fee for a space that is either owned or leased by the company, or switching to another transportation mode, which the company subsidizes as follows:

Table 1

TRANSPORTATION SUBSIDIES PROVIDED BY ARCO

Single driver	$40	(50% of parking price)
Two-person carpool	$60	(75% of parking price)
Three-person carpool	$80	(100% of parking price)
Vanpool	$25 flat	
Regular Bus and Subscription (Charter) Bus:	Approximately 33% of monthly pass to a maximum of $35.	

Source: Atlantic Richfield Company.

[7] Ibid., p. 70.

Carpoolers also receive preferential parking spaces. As a result of the program approximately 61% of the employees commute to work in high occupancy vehicles:

Table 2

MODAL SPLIT OF ARCO HEADQUARTERS EMPLOYEES

(as of January 1, 1982)

	Number	Percent
Two-person carpool	400	12
Three-person carpool	405	12
Vanpool	328	10
Subscription bus	393	12
Bus pass	495	15
Drive alone	924	28
Other	355	11
	3,300	100

Source: Atlantic Richfield Company.

Each new ARCO employee specifies which transportation mode he intends to use. Employees who choose to drive alone to work have $40 a month deducted from their paychecks. Those interested in ridesharing are assisted in finding other employees interested in carpooling or vanpooling by the company's computerized matching system. If an employee elects to purchase a bus pass, he pays only $18 of the $26 monthly cost, with ARCO paying the balance. ARCO purchases the passes for the full $26 price from SCRTD. A master file of the subsidy each person receives is kept to monitor the subsidy program.

Other Programs

Another example of an employer subsidized flexible transportation program is in operation in Evanston, Illinois. In January 1978, the American Hospital Supply Corporation (AHCS) moved its headquarters to a new building in downtown Evanston. In order to encourage public transportation without penalizing those employees who must drive, AHSC did the following:

1. Established $30 monthly parking fee. Thereafter, employees received an increase in their paychecks to cover the cost of parking. The increase could be used for renting a parking space or for any other purpose.

2. Subsidized transit passes. Recognizing that the corporation's facility is conveniently served by both bus and rail, the corporation began to purchase monthly transit passes from the Chicago Transit Authority (CTA) and Northwestern Railroad on a consignment basis. The corporation did not receive a discount. Employees were then

encouraged to purchase the passes from the corporation at a 26.5% discount. Employees who take advantage of the transit passes save about $15.00 a month, as shown in Figure 1.

Figure 1

EMPLOYEE SAVINGS

Employee Pay Adjustment	Cost to Employee	Savings to Employee
	- - - - - - > CTA TRANSIT RIDER	
+$30/month	$40/month - 62.5% discount = $25.00	$15.00 a month
	- - - - - - - -> AUTO RIDER	
	$30/month-no subsidy = $30.00	None (single-occupant auto)

Source: American Hospital Supply Corporation.

Acceptability. Employer-provided transportation cash subsidies have some opposition, principally because the cash subsidy is an income supplement and is treated as taxable income by the Internal Revenue Service. As such, employees do not receive a sum of money which is comparable to the value of employer-provided parking.

One company has developed a way to insure that the employees' subsidy remains substantial enough to be an incentive to use transit. The company instituted a cash reimbursement program that treats the subsidy as an employee business expense. Employees who participate in the alternative transportation program submit monthly expense account forms for the cash subsidies owed to them each month. The company then issues the employees separate checks for the subsidized amount, plus any other expenses they may have had during the month. Since the subsidy is considered an employee business expense, which is reimbursed as an expense account item, it is not treated as a taxable item on W-2 forms submitted to the Internal Revenue Service.

Bicycle Parking

Bicycles have considerable potential as a mode of travel for commuters to employment sites, park and ride lots, and transit stations. Bicycling is an energy-efficent and pollution-free way of travelling that reduces the number of vehicles on the road. Provision of stationary or mobile bicycle parking facilities, including racks, lockers, and trailers may encourage bicycle use. Different facilities for bicycle parking offer varying levels of security depending upon their locations and the length of time they are used. The incidence of crime in a jurisdiction will largely determine the category or class of bicycle parking facility it will use. The higher the class of facility, the more secure and expensive it is likely to be. Bicycle parking classifications are given in Table 3.

Table 3

BICYCLE PARKING CLASSES

• Class I	High-security, long-term parking, which offers complete protection from vandalism and weather, like lockers or attended covered parking.
• Class II	Medium-security parking, which secures both wheels and the frame with a simple user-supplied lock, but without the need for bulky cables or chains.
• Class III	Minimum-security bike racks or fixed object that holds a bike in conjunction with a user-supplied cable, chain, and lock.

Source: Mountain Bicyclists' Association, Parking for Bicycles, 1979, p. 2.

Bicycle racks and lockers can be permanently affixed to physical structures or installed in parking spaces. (A minimum of 10 bicycles can be accommodated in a space previously occupied by one car.) Bicycle lockers that are located near residential areas where children may be tempted to use empty lockers as play areas may require frequent maintenance.

Bicycle parking facilities may also be mobile. Several transit agencies have mounted bicycle racks and attached bicycle trailers to express buses and vans.

Chapter 2

CONTACTS AND CURRENT PROGRAMS

CONTACTS

Responsibility for parking policy, ridesharing, and public transportation programs is shared by various offices within the U.S. Departments of Transportation and Energy, and the U.S. Environmental Protection Agency. Some of the more important resources for information and assistance are listed below. The code following each name is for identification and should be included in written correspondence.

U.S DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

- Office of Engineering
  Provides technical assistance in planning multimodal facilities, such as park and ride facilities.
  Contact: Harold T. Rib
  Chief, Environmental Design and
  Surveys Branch (HNG-22)
  400 Seventh Street, S.W.
  Washington, D.C. 20590
  202/426-0306

- Office of Highway Planning
  Concerned with parking management strategies and analyses.
  Contact: Wayne Berman
  Office of Highway Planning, HHP-32
  400 Seventh Street, S.W.
  Washington, D.C. 20590
  202/426-0210

- National Ridesharing Information Center
  Offers a variety of services to facilitate the exchange of ridesharing information and expertise among employers and others, including more than 250 State and local community ridesharing agencies.
  Contact: National Ridesharing Information Center
  400 Seventh Street, S.W.
  Washington, D.C. 20590
  800/424-9184 (toll-free)

Office of the Secretary

- Office of Technology Sharing
  Provides a variety of technical and general information to State and local governments.
  Contact: Al Linhares
  Director, Office of Technology and Planning Assistance (I-30)
  400 Seventh Street, S.W.
  Washington, D.C. 20590
  202/426-4208

Urban Mass Transportation Administration

- Office of Planning Assistance
  Administers planning assistance programs. Most questions regarding these programs should be directed to the regional offices (see Table 4). For further assistance:
  Contact: Charles Graves, Chief
  Office of Planning Assistance, UGM-20
  400 Seventh Street, S.W.
  Washington, D.C. 20590
  202/426-2360

- Office of Policy Development
  Conducts research on various parking measures and their impact.
  Contact: Kenneth Bolton, Chief
  Office of Policy Development UBP-10
  400 Seventh Street, S.W.
  Washington, D.C. 20590
  202/426-4058

- Office of Service and Management Demonstrations
  Sponsors projects demonstrating innovative transportation service and management techniques.
  Contact: James Bautz
  Chief, Transit Services Division, URT-31
  400 Seventh Street, S.W.
  Washington, D.C. 20590
  202/426-4984

U.S. DEPARTMENT OF ENERGY

DOE Headquarters

- Office of Transportation Programs
  Provides technical assistance and publications relating to vanpooling. Sponsors research on transportation energy conservation programs.
  Contact: Vanpool Program Manager (5-H-Q44)
  U.S. Department of Energy
  1000 Independence Avenue, S.W.
  Washington, D.C. 20585
  202/252-8017

Table 4

UMTA Regional Offices

Region I	Transportation Systems Center, Kendall Square, 55 Broad, Cambridge, MA 02142, Tel: 617/494-2055; FTS 837-2055.
Region II	Suite 1811 26 Federal Plaza, New York, NY 10007, Tel: 212/246-8162; FTS 264-8162.
Region III	Suite 1010, 434 Walnut Street, Philadelphia, PA 19106, Tel: 215/597-8098; FTS 597-8098.
Region IV	Suite 400, 1720 Peachtree Road, N.W. Atlanta, GA 30309, Tel: 312/353-1000; FTS 353-1000
Region V	Suite 1740, 300 S. Wacker Drive, Chicago, Il 60606, Tel: 312/353-1000; FTS 353-1000
Region VI	Suite 9A32, 819 Taylor Street, Fort Worth, TX 76102, Tel: 816/926-5053; FTS 334-3787.
Region VII	Room 303, 6301 Rock Hill Road, Kansas City, MO 64131, Tel: 816/926-5053; FTS 926-5053.
Region VIII	Suite 1822, Prudential Plaza, 1050 17th Street, Denver, CO 80202, Tel: 303/837-3242; FTS 327-3242.
Region IX	Suite 620, Two Embarcadero Center, San Francisco, CA 94111, Tel: 415/556-2994; FTS 556-2884.
Region X	Suite 3106, Federal Building, 915 Second Avenue, Seattle, WA 98174, Tel: 206/442-4210.

Table 5

DOE REGIONAL OFFICES

For information on specific DOE programs in transportation energy conservation that interface with parking, contact your State energy office or one of the DOE regional offices listed below:

Region I
Mr. Robert Philpott
Director for Conservation and Energy Resource Development
Department of Energy
150 Causeway Street
Room 700
Boston, MA 02114
617/223-3106

II
Mr. Terence Sands
Acting Director for Conservation and Environment
Department of Energy
26 Federal Plaza
Room 3206
New York, NY 10007
212/264-8856

III
Mr. William Kaplan
Director for Conservation and Energy Resource Devp.
Department of Energy
1421 Cherry Street
10th Floor
Philadelphia, PA 19102
214/597-3606

IV
Mr. Fred Singleton
Director for Conservation and Energy Resource Development
Department of Energy
1655 Peachtree Street, N.E.
8th Floor
Atlanta, GA 30309
404/257-2526

V
Mr. Ken Johnson
Director for Conservation and Environment
Department of Energy
175 West Jackson Boulevard
Room A333
Chicago, IL 606604
312/353-3590

VI
Mr. Dan Deaton
Director of Conservation and Environment
Department of Energy
2626 West Mockingbird Lane
Dallas, TX 72235
214/749-7714

VII
Mr. Gerald S. Thurston
Director of Conservation and Environment
Department of Energy
324 East 11th Street
Kansas City, MO 64106
816/758-3720

VIII
Mr. James McCool
Director for Conservation and Energy Resource Development
Department of Energy
P.O. Box 2647 - Belmar Branch
Lakewood, CO 80226
303/234-2165

IX
Ms. Sharon I. Sellars
Director for Conservation and Environment
Department of Energy
111 Pine Street, 4th Floor
San Francisco, CA 94111
415/556-7148

X
Mr. Gilbert S. Haselberger
Director for Energy Conservation
Department of Energy
1923 Federal Building
Seattle, WA 98174
206/442-1746

ENVIRONMENTAL PROTECTION AGENCY

EPA Headquarters

- Office of Transportation and Land Use Policy
  Provides technical and policy guidance on Clean Air Act requirements for including transportation-related control measures in State Air Quality Implementation Plans.
  Contact: John O. Hidinger, Director
  Office of Transportation and Land Use Policy (ANR-445)
  401 M Street, S.W.
  Washington, D.C. 20460
  202/775-0480

- Office of Public Awareness
  Distributes information on environmental topics, including, A Citizen's Guide to Clean Air and Transportation: Implications for Urban Revitalization and a slide show discussing the advantages and applications of various transportation and parking control measures.
  Contact: Inez Artico
  Associate Director
  Office of Public Awareness (A-107)
  401 M Street, S. W.
  Washington, D.C. 20460
  202/755-0720

For information regarding the coordination of transportation and parking programs, contact EPA's regional offices, listed below.

Table 6

EPA REGIONAL OFFICES

Region I	JFK Federal Building, Room 2303, Boston, MA 02203, Tel: 617/223-7210.
Region II	26 Federal Plaza, Room 908, New York, NY 10007, Tel: 212/264-2525.
Region III	Curtis Building, 6th and Walnut Streets, Philadelphia, PA 19106, Tel: 215/597-9814.
Region IV	345 Courtland Avenue, N.E., Atlanta, GA 30308, Tel: 404/881-4727.
Region V	230 S. Dearborn, Chicago, IL 60604, Tel: 312/353-2000.
Region VI	First Center Building, 1201 Elm Street, Dallas, TX 75201, Tel: 214/767-2600.
Region VII	324 East 11th Street, Kansas City, MO 64106, Tel: 816/374-5493.
Region VIII	1860 Lincoln Street, Suite 900, Denver CO 80203, Tel: 303/837-3895.
Region IX	215 Fremont Street, San Francisco, CA 94105, Tel: 415/556-2320.
Region X	1200 Sixth Avenue, Seattle, WA 98101, Tel: 206/442-1220.

CURRENT PROGRAMS

- Atlantic City, New Jersey
  Increased parking demand in Atlantic City as a result of casino and hotel development has led to the construction of parking facilities on the mainland and the establishment of shuttle service to the hotels on the island.
  Contact: Ian Jerome
  Atlantic County Transportation Authority
  19 South New York Avenue
  Atlantic City, NJ 08401
  609/344-4149

- Bellevue, Washington
  The City of Bellevue allows a reduction of up to 50% of the required parking for developments in the central business district, provided that demand is reduced by instituting alternative transportation programs. The alternative transportation programs include, but are not limited to the following:

  -- Transit/vanpool fare subsidy.

  -- Imposition of a charge for parking.

  -- Provision of subscription bus services.

  -- Flexible work hour schedule.

  -- Capital improvement for transit services.

  -- Preferential parking for carpools/vanpools.

  -- Participation in the ride matching program.

  -- Reduction of parking fees for carpools and vanpools.

  -- Establishment of a transportation coordinator position to implement carpool, vanpool and transit programs.

  -- Bicycle parking facilities.

  One developer substantially reduced his parking requirement by agreeing to a covenant, which specifies that he perform the following:

  -- Purchase, maintain and operate two vans for employee commuting.

  -- Provide an incentive for carpooling by reserving 40 parking spaces for carpools and vanpools.

  -- Reduce available parking to 512 parking stalls.

  -- Charge for employee parking.

  -- Provide a financial incentive for alternate transportation, such as Metro Transit tickets or passes, and salary transit allowances.

-- Review van operations one year after occupancy to determine the feasibility of adding vans.

In 1979, the minimum parking requirement for office development was abolished, and a maximum parking requirement was set at one space per 1,000 square feet of net floor area.

Contact: Kay Kenyon
Bellevue City Hall
11511 Main Street
P.O. Box 1768
Bellevue, WA 98009
206/453-4888

- Dallas, Texas

The Dallas Transit System operates a shuttle service from a peripheral park and ride lot at the Reunion Arena to the central business district. The fee for all-day parking and the shuttle service is $1. Sponsored in conjunction with Reunion Arena and the central business district, the shuttle service is an attempt to ease traffic congestion and increase the number of short-term parking spaces available in the Dallas central business district.

Contact: Cliff Franklin
General Manager
Dallas Transit System
101 North Peak Street
Dallas, TX 75226
214/827-3400

- Evansville, Indiana

Park and ride lots, an expanded carpool matching program, and the construction of a commuter bikeway that will link the densely populated eastside of Evansville with the central business district are proposed by the City to improve the attractiveness of areawide transit, increase carpool usage, and encourage bicycling.

Contact: David Gerard
Director
Evansville Urban Transportation Study
Room 312, Civic Center
Evansville, IN 47708
812/426-5230

- Grand Rapids, Michigan

The development of park and ride lots that support current ridesharing and transit projects, the construction of bike paths, and the provision of bicycle storage facilities in the central business district are three elements of the Grand Rapids metropolitan area's plan to encourage commuters to leave their autos out of the newly revitalized, pedestrian-oriented shopping district.

Contact: Hal Morse
West Michigan Regional Planning Commission
60 Monroe N.W.
Grand Rapids, MI 49503
616/454-9375

- Jacksonville, Florida

The City of Jacksonville has adopted a low-cost approach to alleviate peak period congestion in a travel corridor constrained by the capacity of a single bridge. The program is designed to encourage a mode shift from single occupant autos to high occupancy vehicles. The elements of the program include increasing the number of park and ride lots and carpool staging areas, focusing ridesharing activities on the target area, and constructing pedestrian crossings and bike paths to park and ride lots and express bus parking facilities.

Contact: Earnest W. Elliott
Florida Department of Transportation
Haydon Burns Building
605 Suwannee Street
Tallahasee, FL 32301
904/488-3329

- Lincoln, Nebraska

A package of actions has been developed to improve the performance of transportation in downtown Lincoln. Two elements of the package include preferential carpool parking in a downtown parking lot, which is supported by a park and shop program, and bicycle system improvements, such as a grade separation on major bikeways bound for the central business district.

Contact: Mr. Keith Moxon, Supervisor
Transportation Development Division
Lincoln Transportation Department
233 S. 10th Street
Lincoln, NE 68508
402/473-6673

- Los Angeles, California

The City of Los Angeles has developed a parking management program that consists of two separate parts. The first component includes a city employee incentive measure. City staff investigated administrative systems and rate structures for city employee parking, and recommended modifications to the Mayor and City Council that will create incentives for greater participation in ridesharing by city employees. The second component is a system of measures that offers alternatives to traditional municipal land use regulations governing private sector provision of on-site commuter parking. The measures will create incentives for private sector provision of ridesharing alternatives.

Contact: Office of the Mayor
City of Los Angeles
City Hall
200 N. Spring Street
Los Angeles, CA 90012
213/485-6750

- Madison, Wisconsin

  Bus ridership and economic activity have increased in Madison due to the City's parking management strategies. These include providing greater amounts of short-term parking by converting long-term spaces to short--term at a rate of 8%-10% a year, discouraging long-term parking by raising parking rates, eliminating some on-street parking in the downtown area, providing park and ride service from fringe lots to the central area, and requiring government employees to pay for parking.

  Contact: Ross Patronsky
  Department of Transportation
  City of Madison
  111 City-County Building
  Madison, WI 53709
  608/266-4761

- New Orleans, Louisiana

  A comprehensive low-cost parking management program is underway in the City to encourage the use of transit and to promote ridesharing. The program includes fringe parking, on-street parking for high occupancy vehicles, and a residential parking permit program.

  Contact: Mayor's Office of Analysis and Planning
  City of New Orleans
  City Hall, and Room 8E06
  New Orleans, LA 70112
  504/586-3103

- Orlando, Florida

  To improve peak hour traffic conditions in and around the central business district in Orlando, the City plans a number of transit service, ridesharing, and, parking management improvements, including the institution of express bus and shuttle service, the coordination of ridesharing, and the establishment of park and ride and preferential parking.

  Contact: Gary Skaff
  Transportation Engineering Department
  City Hall
  Orlando, FL 32801
  305/849-2333

- Palo Alto, California

  The City of Palo Alto has instituted comprehensive transportation and parking management plans to reduce the use of single occupant vehicles in the downtown. Elements of the plans include downtown shopper and commuter shuttle service, subsidized transit passes, free parking for high occupancy vehicles in city lots and on city streets near major employer sites, modifying the zoning ordinance to permit compact car parking, in-lieu parking regulations, short-term parking, bicycle storage facilities, and the use of city vehicles for employee commute trips. The commuter shuttle service carries commuters from the California Avenue Southern Pacific depot to work sites in the Stanford Industrial Park. The shuttle service was started with $40,000 of city funds and financial contributions from Stanford industrial corporations, in conjunction with the Santa Clara County Transit Authority and the Santa

Clara Manufacturing Group. After the first year of successful demonstration, Santa Clara County took over the shuttle service operation.

Contact: Ted T. Noguchi
Director of Transportation
City of Palo Alto
P.O. Box 10250
Palo Alto, CA 94303
415/329-2520

- Pittsburgh, Pennsylvania

The City of Pittsburgh discourages all-day parking in the downtown area through a variety of actions that promote the use of transit and ridesharing. Two cost-effective measures the City plans to establish are a fringe parking shuttle service and a contraflow bus lane. New transit service on the contraflow bus lane will be established to connect existing underutilized fringe parking spaces with the downtown area. Preferential parking is also provided for carpools and vanpools in Pittsburgh Public Parking Authority garages.

Contact: Robert H. Lurcott
Planning Director
Department of City Planning
Public Safety Building
Pittsburgh, PA 15219
412/255-2200

- Portland, Oregon

Portland's parking management plan limits the number of parking spaces in the downtown, calls for the development of multi-use parking facilities, removes some curb parking spaces, and increases the amount of short-term parking by improving transit services and bicycle facilities. The bicycle program is supported by a state program that requires the use of one percent of state highway construction funds for bicycle provisions.

Contact: Janet Schaeffer
Mgr. Bicycle and Pedestrian Program
621 S.W. Alder St. Room 720
Portland, OR 97205
503/248-4407

- Rochester, New York

The Genessee Transportation Council (GTC) in Rochester has embarked on a program to integrate parking management with supporting transportation activities in order to achieve a significant increase in vehicle occupancy for (1) travel to downtown Rochester and (2) industrial work travel at two or three other city locations. In 1975, 48% of the CBD employees drove downtown by themselves. The goal of GTC's program is to reduce that figure to 40%. The shift is to result in approximately equal increases in carpool arrivals and transit arrivals. A modest increase is also targeted for other forms of arrival, primarily pedestrian and cycling. Parking strategies will include preferred spaces and fee incentives in municipal parking lots for carpools. Subsidized transit passes will be made available to employees in lieu of free

parking, as part of an overall transit marketing program. Bike lockers will be placed in conveniently located municipal parking lots, and a small barrier to a bikeway connection will be removed. A 25% increase in bicycle arrivals is expected. At present, 2% to 3% of downtown arrivals are by bicycles.

Contact: Nathan L. Jaschik
Central Staff Director
Genessee Transportation Council
55 St. Paul Street
Rochester, NY 14604
716/232-6240

- San Antonio, Texas

The City of San Antonio provides preferential parking to City employees who carpool to work. The program offers reserved, nearby parking spaces at rates lower than those of other downtown parking lots. Priority is given to larger carpools in terms of availability of spaces and in reduced rates. Revenues from the lot, which exceed operating expenses, fund the City's pass assistance program. City employees may purchase monthly bus passes of varying denominations at $5.00 off the regular price because of the subsidy. Over 500 City employees benefit from the combined programs, resulting in an annual savings of approximately $382,666 in commuting costs and $90,426 in parking costs. The majority of the participants in the programs have indicated that the availability of the programs influenced them to switch their mode of transportation.

Contact: Roland A. Lozano
Director of Planning
City of San Antonio
P.O. Box 9066
San Antonio, TX 78285
512/299-7860

- Seattle, Washington

The City of Seattle and the regional ridesharing agency known as the Seattle/King County Commuter Pool have the ability to recommend parking reduction measures that will mitigate adverse impacts of specific development projects in the city through the State Environmental Impact Statement review process. Pursuant to the State Environmental Policy Act of 1971, as amended, the Seattle City Council adopted an ordinance to encourage the use of alternative transportation modes such as public transit, vanpools, carpools, and bicycles. The ordinance authorizes the City to require measures, such as preferred carpool and vanpool parking, as a means of mitigating adverse parking impacts. While Commuter Pool has no specific authority to allow parking reductions, its comments, which are submitted to the Washington State Department of Construction and Land Use, are included as conditions for the approval of a building permit. A comprehensive list of standard mitigating measures has been developed by Commuter Pool for use during the review process.

Contact: Bill Roach
Seattle-King County Commuter Pool
Seattle Department of Engineering
710 Second Avenue, Room 300
Dexter Horton Building
Seattle, WA 98104
206/625-4500

- St. Paul Minnesota
  Preferential parking for high occupancy vehicles, fringe parking with shuttle service that is supported by parking meter revenues, bike racks and subsidized parking in commercial lots for evening shoppers are some of the elements in St. Paul's plan to improve downtown transportation. Program objectives are to provide low cost parking alternatives, increase carpool and vanpool organization, shift commuter parking to fringe areas, and reduce the need to provide new short term parking.
  Contact: Barry L. Engen
  Project Manager
  Department of Planning and Economic Development
  City of St. Paul
  25 W. Fourth Street
  St. Paul, MN 55102
  612/292-6258

Chapter 3

ANNOTATED BIBLIOGRAPHY

Brambilla, Roberto and Gianni Longo. Banning the Car Downtown, Selected American Cities. Washington, D.C.: Prepared for the U.S. Department of Housing and Urban Development, National Endowment for the Arts, and the Presidents Council on Environmental Quality, 1976.

An in-depth analysis of 16 North American pedestrianization experiments, providing information on the process each city underwent in the creation of its mall. Some of the examples represent very successful projects, while others describe failures. This range of results has been examined within the context of the complexity of pedestrian planning.

Federal Highway Administration. Study of Parking Management Tactics, Volumes I and II. Washington, D.C.: U.S. Department of Transportation, 1979.

Volume I presents ten selected case studies on parking management. Volume II, which also contains Volume I, describes six types of parking management tactics: on-street parking supply tactics; offstreet parking supply tactics; off-street parking supply tactics for activity centers; tactics for fringe and corridor parking facilities; pricing tactics; enforcement and adjudication tactics; and marketing tactics. The report documents and assesses the planning, implementation, and operational characteristics of these types of actions based upon their application in 20 selected cities across the United States.

_____. Parking Management Tactics, Volume III: A Reference Guide. Washington, D.C.: U.S. Department of Transportation, 1981.

A synthesis of the city by city experiences in parking management that were presented in the 1979 Volume I and II. It presents specific considerations and guidelines that can be used to develop, implement, and operate parking management programs.

_____. Bikeway Demonstration Project, Case Studies. Washington, D.C.: U.S. Department of Transportation, 1981.

Reports on the results of the 41 bikeway demonstration projects in 31 States that were selected for the Federal program in 1976. The projects demonstrate a vast array of bicycle facilities. Bicycle parking devices, bicycle racks on buses, all types of bikeways, and facilities to overcome physical barriers are a few of the characteristics being demonstrated. Low cost and more expensive options are explored.

Highway Research Board. Special Report No. 125, Parking Principles. Washington, D.C.: National Academy of Sciences, 1971.

A summary of parking principles, procedures, and practices that have proved to be effective in handling parking and terminal bus facility problems.

Montgomery County Government. Transportation Management Study for the County Government Center. Rockville: Montgomery County Department of Transportation, 1979.

An assessment of the potential for transit and para transit alternatives to the single occupant automobile for major commercial developments in Montgomery County, Maryland. Major emphasis is on transportation alternatives for government employees at the expanded Montgomery County Government office and court complex in the City of Rockville.

Mountain Bicyclists' Association, Inc. Parking for Bicycles, a Guide to Selection and Installation. Denver: City and County of Denver, 1979.

A short pamphlet that addresses the issue of bicycle security. It attempts to encourage bicycling by answering typical questions of building managers and architects regarding bicycle parking, such as where to locate bicycle parking at the site, the types of hardware (racks and lockers) available, and how to estimate space requirements. It also provides a list of bicycle manufacturers.

Olsson, Marie and Gerald Miller. Parking Discounts and Carpool Formation in Seattle. Washington, D.C.: The Urban Institute, 1978.

Presents the results of a survey conducted in 1977 of participants in a carpool incentive program in Seattle, where reserved parking at two municipal facilities is provided to carpoolers at greatly reduced prices. The report examines what was the only existing example of a financial carpooling incentive program offered to the general public at that time, although similar programs were under consideration in a number of cities. The study reports that parking discounts alone will encourage more transit riders than single-occupant auto drivers to join carpools, and may attract into the discounted facilities automobiles that had previously been parked in expensive locations outside the central business district.

Organization for Economic Co-operation and Development. Evaluation of Urban Parking Systems. Paris: OECD, 1980.

Provides a review of new developments in urban transportation planning and management, including the evaluation of methodologies currently available, and the research and experience of countries throughout the western world regarding the effects, benefits, and shortcomings of the most recent and innovative parking schemes introduced or considered in member OECD countries.

Parker, Martin R. Jr., and Michael J. Demetsky. Evaluation of Parking Management Strategies for Urban Areas. Charlottesville, VA: Virginia Highway and Transportation Research Council, 1980.

A state of the art report on parking management in urban areas in the United States. The report is based upon an extensive review of literature and a nationwide questionnaire survey that was distributed to 458 city officials, 173 of whom responded. Key elements of parking management are identified, including the groups affected and the impacts of parking, descriptions of various strategies, the need for management, and problems encountered with implementing parking controls. The report evaluates 17 strategies and 9 support measures and provides a practical set of guidelines that can be used by planners and traffic engineers for selecting and evaluating parking management measurers.

Shoup, Donald C. and Don H. Pickrell. Free Parking as a Transportation Problem. Washington, D.C.: U.S. Department of Transportation, 1980.

Evaluates four alternative policies for correcting the distortions created by free parking: charge all drivers commercial parking rates; treat free parking as taxable income; offer economic incentives to carpools (e.g., free parking and cash bonuses); and, amend Federal income tax laws to permit employers to give uniform tax-exempt travel allowances to all employees, and end free parking.

Witheford, David K. and George E. Kanaan. Zoning, Parking, and Traffic. Saugatuck: Eno Foundation for Transportation, 1972.

Describes the ways that zoning can serve traffic interests, both by safeguarding the costly investments in urban transportation programs and by maintaining the values of existing facilities. Presents the findings from a survey of existing zoning practices, mainly on the problems of off-street parking and loading.

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Transportation

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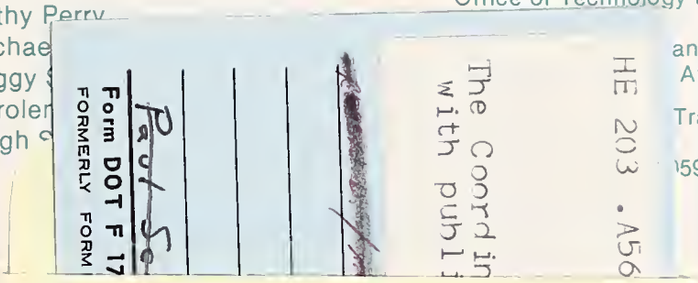

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