TCRP
SYNTHESIS 62

TRANSIT
COOPERATIVE
RESEARCH
PROGRAM

Sponsored by
the Federal
Transit Administration

Integration of Bicycles and Transit

A Synthesis of Transit Practice

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

TRANSIT COOPERATIVE RESEARCH PROGRAM

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Integration of Bicycles and Transit

A Synthesis of Transit Practice

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SUBJECT AREAS
Public Transit

Research Sponsored by the Federal Transit Administration in Cooperation with
the Transit Development Corporation

TRANSPORTATION RESEARCH BOARD

WASHINGTON, D.C.
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www.TRB.org

The nation's growth and the need to meet mobility, environmental, and energy objectives place demands on public transit systems. Current systems, some of which are old and in need of upgrading, must expand service area, increase service frequency, and improve efficiency to serve these demands. Research is necessary to solve operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the transit industry. The Transit Cooperative Research Program (TCRP) serves as one of the principal means by which the transit industry can develop innovative near-term solutions to meet demands placed on it.

The need for TCRP was originally identified in *TRB Special Report 213—Research for Public Transit: New Directions,* published in 1987 and based on a study sponsored by the Federal Transit Administration (FTA). A report by the American Public Transportation Association (APTA), *Transportation 2000*, also recognized the need for local, problem-solving research. TCRP, modeled after the longstanding and successful National Cooperative Highway Research Program, undertakes research and other technical activities in response to the needs of transit service providers. The scope of TCRP includes a variety of transit research fields including planning, service configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices.

TCRP was established under FTA sponsorship in July 1992. Proposed by the U.S. Department of Transportation, TCRP was authorized as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). On May 13, 1992, a memorandum agreement outlining TCRP operating procedures was executed by the three cooperating organizations: FTA, the National Academy of Sciences, acting through the Transportation Research Board (TRB); and the Transit Development Corporation, Inc. (TDC), a nonprofit educational and research organization established by APTA. TDC is responsible for forming the independent governing board, designated as the TCRP Oversight and Project Selection (TOPS) Committee.

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FOREWORD

By Staff
Transportation
Research Board

Transit administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to the transit industry. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire transit community, the Transit Cooperative Research Program Oversight and Project Selection (TOPS) Committee authorized the Transportation Research Board to undertake a continuing study. This study, TCRP Project J-7, "Synthesis of Information Related to Transit Problems," searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute a TCRP report series, *Synthesis of Transit Practice*.

This synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

PREFACE

This synthesis updates *TCRP Synthesis of Transit Practice 4: Integration of Bicycles and Transit*. Since that report's publication in 1994, there has been significant growth in bicycle and transit services. Therefore, this synthesis reflects the additional knowledge gained by transit agencies in the past 10 years about integrating bicycles and transit. It documents many different types of transit agencies in the United States and Canada. This topic is of interest to transit agencies of all sizes and locations; state, regional, and local transportation policymakers; and elected officials. It is also of interest to bicycle and transit planners and advocates. The experiences that are documented can help transit agencies improve existing services and assist other communities in developing new bicycle and transit services.

An on-line survey was conducted to gather feedback from transit agencies that currently offer or are considering providing bicycle services. Follow-up interviews were done to gather additional information about one or more of their transit services. Based on this detailed information, topical case studies were developed and included throughout the report.

A panel of experts in the subject area guided the work of organizing and evaluating the collected data and reviewed the final synthesis report. A consultant was engaged to collect and synthesize the information and to write the report. Both the consultant and members of the oversight panel are acknowledged on the title page. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

CONTENTS

INTEGRATION OF BICYCLES AND TRANSIT

SUMMARY

During the past decade, there has been significant growth in bicycle and transit integration. Transit agencies are increasingly mounting bicycle racks on buses, allowing bicycles to be brought on board trains, installing bicycle racks and lockers at transit stations, providing staffed bicycle parking facilities (also referred to as bike stations) at major transit hubs, and offering other bicycle services. Forty-five (80%) of the 56 North American transit agencies that responded to a survey for this report started at least one of their bicycle services after 1994, when *TCRP Synthesis of Transit Practice 4: Integration of Bicycles and Transit* was published.

The purpose of this report is to share information about how bicycles are integrated with public transportation by many different types of transit agencies in the United States and Canada. The information in this synthesis can be used to improve existing bicycle services and to assist other communities with developing new bicycle and transit services. This report is an update of *TCRP Synthesis of Transit Practice 4*.

There are many reasons for the growth in bicycle and transit integration. Transit agencies have found that bicycle services can provide the following benefits:

- Bicycling extends the catchment area for transit services and provides greater mobility to customers at the beginning and end of their transit trips.
- Bicycle-on-transit services provide bicyclists with the option to take transit to avoid riding after dark, up hills, in poor weather, or in areas that do not provide comfortable bicycle access (e.g., bridges, tunnels, construction areas, and narrow roads with high traffic volumes). Bicycle-on-transit is also an option for bicyclists who have mechanical problems or need to get home in an emergency.
- Bicycle and transit integration is also thought to decrease automobile traffic congestion, help reduce air pollution (by reducing motor vehicle trips), and improve the public image of transit.

All of these benefits help communities reduce their reliance on single-occupant vehicle travel and make their transportation systems work more efficiently.

The information provided by transit agencies and other background investigations for this study revealed several key findings about bicycle and transit integration. The main findings of this study are summarized here.

There has been significant growth in bicycle and transit integration in North America over the past decade. In the early 1990s, bicycle and transit integration at many agencies included only bike parking; a few were starting to establish bicycle-on-bus programs and experimenting with bicycle-on-rail accommodation. Bicycle services are now offered by agencies of all sizes in many different parts of the United States and Canada. Bicycle on bus, in particular, has become quite common owing to increases in federal funding sources, transit agencies replacing old buses with newer models, and private industry developing bicycle rack designs to overcome operational limitations.

Transit agencies are providing an increasingly diverse set of bicycle services to their customers. More agencies are offering services such as mounting bicycle racks on vanpool

vehicles, installing hooks and racks for storing bikes on rail cars, using high-capacity bus bicycle racks, providing high-capacity bike parking at transit hubs, and developing bike stations.

By providing bicycle services, many transit agencies believe that they can capture additional customers during off-peak times. Many bicycle trips are made for social or recreational purposes and occur during off-peak travel times, such as on weekends, in the early morning, or in the late evening.

Despite the growing number of services, few agencies have collected detailed data about bicycle-on-transit rider characteristics or bicycle parking use. Most transit agencies have performance measures for overall ridership levels, frequency of service, maintenance, and other aspects of transit programs; however, few have incorporated bicycle services into their performance measures.

Bicycle and transit integration is viewed by many agencies as a reliable tool for marketing and promoting good community relations. Some agencies believe that bicycle services can help increase their base of regular customers. Others believe that bicycle services can build support from organizations that promote environmental issues and alternatives to personal automobile use. A majority of the agencies contributing information to this study provide information about their bicycle services on their transit agency websites and through brochures. Several have sponsored demonstrations on how to load bicycles on bus racks at transit hubs and at bicycle to work events.

Good relationships with local bicycle advocacy groups have been helpful to transit agencies in their efforts to promote new bicycle services. Some transit agencies reported that these advocacy groups have helped raise awareness about their bicycle programs through e-mail lists, websites, and other activities. A few of the agencies developed partnerships with these groups for managing bicycle parking programs. Bicycle advocacy groups can also be a resource for suggesting improvements from a bicycle user's perspective.

Some bicycle and transit integration programs exist in communities that support bicycling in other ways (i.e., by providing bicycle lanes, bike routes, shared-use paths, and bicycle parking). Several transit agencies have participated in planning efforts with local jurisdictions to ensure that transportation facility construction and land use development facilitate bicycle access to transit.

It is relatively inexpensive for transit agencies to provide bicycle services. Providing bicycle racks on a bus or vanpool vehicle typically costs between $500 and $1,000, which represents a small fraction of the cost of the entire vehicle. Bicycle storage equipment for rail cars is also a small portion of their total cost. Allowing bicycles to be brought on board buses and trains can be done with little or no capital investment. Bicycle racks typically cost between $150 and $200, and bicycle lockers between $500 and $2,000. By comparison, the cost to construct automobile parking can range from $3,500 to $12,000 per space for surface parking and between $10,000 and $31,000 per space for structured (garage) parking.

Bicycle and transit services are inexpensive for bicyclists. Most agencies do not require additional fees for bicyclists to use bus, rail, or bicycle rack services. Some agencies charge fees for permits or rental leases (such as a set amount per month, a refundable deposit, or a one-time charge), particularly for secure bicycle locker facilities.

Of the agencies that do collect data, most that have tracked the use of bicycle-on-transit services and bicycle parking have shown growth over time. It is common to see the most significant growth in use during the first few years of a new service as information about the service spreads to potential customers. Sometimes modifications to a program, such as removing permit requirements to bring a bicycle on transit or increasing the percentage of buses with racks, can increase usage levels.

As a whole, transit agencies that provided information for this study reported very positive reactions from bicyclists and generally favorable reactions from other transit riders, transit agency staff, and the general public.

The groups that are most likely to react negatively toward bicycle and transit integration are transit operators and maintenance workers. Bus drivers' unions in particular have expressed concerns regarding bus bike racks, because they believe that it adds an extra task to bus drivers' duties. Many agencies have overcome these concerns through training, demonstrations, and actual experience.

Initial concerns regarding bicycle-on-transit services are often overcome after the services are implemented. Many agencies reported that the initial concerns from transit operators, maintenance workers, or other groups diminished after bicycle services were tested over time under working conditions.

Although few agencies reported significant maintenance problems, some transit agency maintenance departments have opposed bicycle services because of issues such as damaged bus bike racks, abandoned bicycles on bus racks and at transit stations, and vandalized bicycle lockers.

Systems with more comprehensive bicycle and transit integration services tend to have the most success attracting bicycling customers. Several transit agencies reported that their bike-on-bus and bike-on-rail services tended to have greater use when bicycles were accommodated at all times on all routes. There are often budgetary and capacity limitations to providing bicycle services throughout a system. However, when it is possible, installing bike racks on all buses and removing peak period and permit restrictions can help a transit agency serve the most potential bicycle customers.

CHAPTER ONE

INTRODUCTION

BACKGROUND

Brief History of Bicycle and Transit Integration

The first formalized bicycle and transit integration programs were bike-on-ferry services established in the 1940s and 1950s. A few transit systems began to experiment with bike-on-bus services (see Figure 1) in the 1970s and with bike-on-rail services in the 1980s. Most of these bicycle services were local initiatives that were not originally duplicated by other transit agencies.

Significant growth in bicycle and transit integration services began in the early 1990s. In 1991, the U.S. Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA), which emphasized a multimodal approach to improve the efficiency of the transportation system (*1*). This legislation increased the amount of funding available for bicycle and pedestrian facilities and transit systems. ISTEA was followed in 1997 by the Transportation Equity Act for the 21st Century (TEA-21), which continued to support the development of multimodal transportation systems (*2*). This federal legislation has helped to create funding for bicycle and transit programs, including bicycle projects, under the eligibility for both highway and transit programs. State departments of transportation (DOTs), counties, and municipalities are all participants in bicycle programs (e.g., California, Delaware, and Washington State DOTs lead their states' efforts); however, this synthesis is focused primarily on transit programs. In that context, local transit agencies spent approximately $28 million of federal transportation funding for bicycle-related projects between fiscal years 1999 and 2004 (*3*). Funding for these projects did not all come from transit programs, but also included Highway Surface Transportation Program and Congestion Mitigation and Air Quality (CMAQ) funds transferred for transit use. Note that this synthesis does not capture the additional funds used for bicycle programs from the federal highway enhancements program, or state, county, or municipal sources not related to transit.

The Transportation Association of Canada published *A New Vision for Urban Transportation* in 1993, which was reprinted in 1998 (*4*). One of its specific principles was to provide "storage facilities at transit stations and on transit vehicles to encourage bike and ride." Transport Canada prepared *Sustainable Development Strategy* documents in 1997, 2001, and 2003. These strategies promote a multimodal transportation system and emphasize reducing the transportation system's negative impacts on the environment. The 2003 *Strategy* mentions both bicycling and public transportation sustainable transportation choices. It also promotes investment in planning and infrastructure for sustainable transportation facilities (*5*). However, local funds are typically used for the integration of bicycles and transit in Canada; very limited federal funds are available.

During the past 15 years, bicycle and transit services have continued to expand and diversify. Emerging types of bicycle and transit integration include bike-on-vanpool services, new ways to store bicycles on rail cars, high-capacity bus bicycle racks, high-capacity bike parking at transit stations, and staffed bicycle parking. Transit agencies have learned from the experiences of agencies that pioneered bicycle services and have been able to develop successful bicycle programs in their own communities.

TCRP Synthesis of Transit Practice 4

The publication of *TCRP Synthesis of Transit Practice 4: Integration of Bicycles and Transit* in 1994 provided one of the first comprehensive reports on bicycle and transit integration in North America (*6*). It covered bicycle-on-bus, bicycle-on-rail, bicycle-on-ferry, and bicycle parking and access programs. The 1994 synthesis described different bicycle services and discussed issues such as procedures and regulations, safety, staffing, training, marketing, and procurement of equipment.

Recent Research on Integration of Bicycles and Transit

Since the publication of *TCRP Synthesis of Transit Practice 4*, the literature on bicycle and transit integration has primarily focused on services provided by individual agencies. Studies have summarized and evaluated bicycle-on-bus, bicycle-on-rail, and bicycle parking programs.

Studies of bicycle-on-bus services have been done in communities such as Miami–Dade County, Florida (*7*); Bremen, Germany (*8*); and Phoenix, Arizona (*9*). Bicycle-on-rail services have been studied in Stuttgart, Germany (*10*) and Santa Clara Valley, California (*11*). General studies have

FIGURE 1 Bike-on-bus service. (*Source:* Central Ohio Transit Agency.)

also addressed the safety of bicyclists on light rapid transit (*12*). Bicycle parking has been researched in Miami–Dade County, Florida (*13*); Berkeley, California (*14*); Ottawa, Toronto, Calgary, and Vancouver, Canada (*15*); the Netherlands (*16*); and in other general assessments of bicycle and transit integration (*12*), guidebooks of bicycle improvement strategies (*17*), and studies of factors that can increase the use of both transit and bicycles (*18*).

Although these studies have evaluated individual programs, few have taken a comprehensive view and presented a detailed analysis of the wide variety of bicycle and transit integration services available in North America. One text includes a chapter on bicycle integration with park-and-ride facilities, metropolitan rail, intercity bus, intercity rail, ferry, and air travel systems (*19*). The FTA has developed a brochure describing how communities have established bicycle–transit partnerships (*20*). This brochure also explains funding that can be used to improve bicycle and transit integration.

Two websites currently provide information on bicycles and transit in North American transit agencies. Spindler and Boyle present a map of many of the transit agencies in the United States that allow bikes on transit, pictures of many types of bicycle and transit integration, and a table of the average number of monthly bicycle boardings and other statistics for 83 transit agencies on Bikemap.com (*21*). Loutzenheiser provides a summary of bicycle-on-rail policies for U.S. transit systems on the Massachusetts Bicycle Coalition website (*22*).

Reasons for Updating TCRP Synthesis of Transit Practice 4

In the decade since the publication of *TCRP Synthesis of Transit Practice 4* there has been significant growth in bicycle and transit services. Forty-five (80%) of the 56 North American transit agencies that responded to a survey for this report started some of their bicycle services after 1994. Of the 121 total bicycle services cited by the participating agencies, 91 (75%) were established after 1994. This synthesis update will reflect additional knowledge that transit agencies have gained in the past 10 years about integrating bicycles and transit.

Additional issues related to bicycle and transit integration need more detailed exploration. Some of these issues were raised as research needs in the 1994 synthesis report, and the others were suggested by the TCRP topic panel for this report. This synthesis addresses the following research issues:

- Design and development of bicycle equipment and intermodal facilities;
- Cost and funding for bicycle services;
- Bicycle parking and access to transit;
- Bicycle policies and related standards;
- Marketing programs and their effectiveness;
- Training and education programs for users, operators, and staff;
- Usage patterns and user demographics;
- Methods used to evaluate and monitor bicycle and transit services; and
- Safety and security.

PURPOSE

The purpose of this synthesis is to share information about how bicycles are integrated with public transportation by many different types of transit agencies in the United States and Canada. As the number of bicycle services offered by transit agencies has increased, agencies have gained more experience and made improvements to their bicycle and transit integration programs. The experiences that are documented in this synthesis can help transit agencies improve their existing bicycle services and assist other communities with developing new bicycle and transit services.

This synthesis is targeted to the following groups:

- Transit agencies;
- State, regional, and local transportation policymakers;
- Elected officials;
- Bicycle and transit planners; and
- Bicycle and transit advocates.

APPROACH AND ORGANIZATION

Synthesis Process

The primary source of information for this synthesis was an on-line survey of transit agencies in the United States and Canada that currently offer or are considering providing bicycle services. Potential survey participants were suggested by members of the Association of Pedestrian and

Bicycle Professionals, identified by members of the project team, and selected from a list of agencies in the National Transit Database. An e-mail link to the online survey was sent to 118 potential participants in November 2004 asking them to complete the survey.

Follow-up telephone interviews were done with 14 agencies to gather additional information about one or more of their bicycle services. This detailed information was used to develop the brief case studies featured in this report.

An effort was made to invite as many transit agency contacts as possible to participate in the survey. The project team reviewed the initial contact list to make sure that agencies of all sizes and from different regions of the United States and Canada were invited to participate. However, a random sample of agencies was not used, so it is not known whether participating agencies were more or less likely to have favorable opinions about bicycle services than agencies that were not invited to participate or chose not to respond. Still, the information provided by the participating agencies was useful for generating the main concepts and providing specific examples throughout this synthesis.

Characteristics of Transit Agencies Providing Information for This Report

Fifty-six transit agencies from throughout North America responded to the online survey and provided input for this report. The agencies were located in 18 states and 4 provinces (see Figure 2). The survey respondents represent a wide range of agency sizes and offer a variety of types of bicycle services (see Table 1). Responding agencies have service areas ranging from 6 to 3,746 square miles and serve between 140,000 and 440,000,000 annual unlinked trips. Bicycle on local bus and bike parking at transit stops and stations were the most common services offered by the participating transit agencies; however, each of the 11 types of bicycle services listed in the survey (including bike on paratransit/taxi, bike on vanpool, and staffed bicycle parking) were offered by at least 3 responding agencies).

Organization of Report

This report is organized into seven chapters. Following this introductory chapter, chapter two provides a summary of exist-

FIGURE 2 Locations of transit agencies participating in the bicycle and transit survey.

TABLE 1
TRANSIT AGENCIES PARTICIPATING IN THE BICYCLE AND TRANSIT INTEGRATION SURVEY

Transit agency information			Transit agency statistics*				Web page	Year agencies established bicycle on transit service(s)***										
Transit agency name	City	State/Province	Annual unlinked passenger trips	Service area population	Size of active fleet**	Service area size (Square miles)	Bike on transit web page address	Bike on bus (local service bus system)	Bike on commuter/ express bus	Bike on light rail (streetcar, tramway, or trolley)	Bike on heavy rail (metro, subway, rapid transit, or rapid rail)	Bike on commuter rail (intercity, regional, or suburban rail)	Bike on trolley bus	Bike on ferry	Bike on vanpool	Bike on paratransit or taxi	Bike parking at transit stops/ stations	Staffed bicycle facilities at stations (e.g. "Bike stations")
Chicago Transit Authority	Chicago	IL	444,065,000	3,667,000	3,190	275	http://www.transitchicago.com/downloads/brochures/biketran.pdf	2001			1999						2001	
Agence metropolitaine de transport	Montreal	Quebec	426,910,000	3,500,000		1,506	http://www.amt.qc.ca/tc/autres/velos.asp					X						
Toronto Transit Commission	Toronto	Ontario	405,000,000	2,400,000	2,724			1980-1989		1950-1959	1950-1959		1980-1989	Before 1950			1980-1989	
Southeastern Pennsylvania Transportation Authority	Philadelphia	PA	296,700,000	3,800,000	3,000	2,200	http://www.septa.org/service/bike_ride.html	2001	2001		1994	1994					1996	
TransLink	Greater Vancouver	British Columbia	273,000,000	2,200,000	1,180	695	http://www.translink.bc.ca/Transportation_Services/Bikes/Default.asp	1991	1999	2003		1999		1970-1979		2004		
New Jersey Transit Corporation (NJ Transit)	Newark	NJ	214,800,000	17,800,000	4,745	3,353	http://www.njtransit.com/rg_bp.shtml	2000	1970-1979	2000		1992					1970-1979	
Calgary Transit	Calgary	Alberta	113,200,000	934,000	890	282	http://www.calgarytransit.com/BIKESONBOARD/bikes_on_board.html	2001		1980-1989							1980-1989	
Maryland Transit Administration	Baltimore	MD	111,656,000	2,078,000	1,154	1,795	http://www.mtamaryland.com/resources/bikesonmta/MTA_Bike_Brochure.pdf	2001	X	1997	X	X						
Tri-Met	Portland	OR	98,503,000	1,254,000	812	574	http://www.trimet.org/guide/bikes.htm	2000		X							1993	
King County Metro Transit	Seattle	WA	96,186,000	1,779,000	1,248	2,134	http://transit.metrokc.gov/tops/bike/bike.html	1970-1979	1970-1979						1994		1993	2003
Regional Transportation District (RTD)	Denver	CO	78,131,000	2,500,000	1,121	2,326	http://www.rtd-denver.com	1992	1970-1979	1994					2002		1980-1989	
San Diego Metropolitan Transit System	San Diego	CA	77,000,000	1,930,000	719	570	http://www.sdcommute.com/Rider_Information/Bikes/Index.asp	X		X						X		
Alameda-Contra Costa Transit District (AC Transit)	Oakland	CA	68,900,000	1,500,000	696	364	http://www.actransit.org/riderinfo/bikes.wu	1997	2003									
Orange County Transportation Authority	Orange	CA	68,000,000	2,600,000	525	440	http://www.octa.net/busrail/geninfo/movies.asp	1995	1995									
Valley Transportation Authority	San Jose	CA	38,400,000		605		http://www.vta.org/services/bikes.html	X	X	X	X						X	
Broward County Transit	Pompano Beach	FL	36,271,000	1,623,000	275	410		1998									1998	
Capital Metro	Austin	TX	34,068,000	647,000	445	500		1995	2003									
Pace Suburban Bus Service	Arlington Heights	IL	33,709,000	5,196,000	1,714	3,746	http://www.pacebus.com/sub/bus_system/bicycle_racks.asp	2002	2002									
Long Beach Transit	Long Beach	CA	26,369,000		220	90	http://www.lbtransit.com/rackandroll.html	2004	2003								2003	2003
Washington State Ferries	Seattle	WA	25,000,000	2,712,000	28	Puget Sound	http://www.wsdot.wa.gov/ferries/bpp/							1950-1959				
Central Florida Regional Transportation Authority d.b.a. LYNX	Orlando	FL	23,437,000	1,537,000	236	2,538	http://www.golynx.com/?pid=1155730	1997	1997									
Victoria Regional Transit System	Victoria	British Columbia	19,500,000	333,000	195	97	http://www.bctransit.com/regions/vic/transitplus/bike_and_ride.cfm	1997	1997							2004	1995	
Charlotte Area Transit System	Charlotte	NC	16,356,000				http://www.charmeck.org/Departments/CATS/Virtual+Transit/Bike+Racks.htm	1997	1997								2001	
Central Ohio Transit Authority	Columbus	OH	16,000,000	1,100,000	275	547	http://www.cota.com/cota/cotaweb/main.xml?intPageID=32&intSectionID=2&SubSubMenu=3	2004	2004								1994	
Grand River Transit	Kitchener	Ontario	15,039,000	379,000	173	123	http://www.grt.ca/web/transit.nsf/vwArticles/6A24334E452B5D7385256C2500685AEA?OpenDocument	2000										
Rochester-Genesee Regional Transportation Authority	Rochester	NY	15,000,000	1,075,000	390	3,700	http://www.rgrta.com/RideTheBus/Default.aspx#BikeRacks	1997	1997									
North County Transit District	Oceanside	CA	11,984,000	858,000	164	1,020	http://www.gonctd.com/breeze/breezeh.html#bikes					1995					1995	
Pinellas Suncoast Transit Authority (PSTA)	Clearwater	FL	9,700,000	925,000	183	280	http://www.psta.net/bikesonbuses.htm	1998	1998				2001					

*Statistics that were not provided by the survey respondents were taken from the National Transit Database and transit agency web pages.
**Active fleet includes bus, rail, van, paratransit, and all other vehicles operated by the transit agency.
***Several survey respondents provided information about specific bicycle services without listing the date that the services started. These services have an "X" listed for year established.

TABLE 1 (*Continued*)

Transit agency information			Transit agency statistics*				Web page	Year agencies established bicycle on transit service(s)***										
Transit agency name	City	State/Province	Annual unlinked passenger trips	Service area population	Size of active fleet**	Service area size (Square miles)	Bike on transit web page address	Bike on bus (local service bus system)	Bike on commuter/ express bus	Bike on light rail (streetcar, tramway, or trolley)	Bike on heavy rail (metro, subway, rapid transit, or rapid rail)	Bike on commuter rail (intercity, regional, or suburban rail)	Bike on trolley bus	Bike on ferry	Bike on vanpool	Bike on paratransit or taxi	Bike parking at transit stops/ stations	Staffed bicycle facilities at stations (e.g. "Bike stations")
Hillsborough Area Regional Transit (HARTline)	Tampa	FL	8,800,000	999,000	182	1,226	http://www.hartline.org/information/programs/bikes/index.html	1995	1995								2003	
Palm Tran	West Palm Beach	FL	7,650,000	1,183,000	126	2,023	http://www.co.palm-beach.fl.us/palmtran/library/bikes_on_buses.pdf	1999										
Utah Transit Authority	Salt Lake City	UT	6,000,000	1,200,000	640	1,400	http://www.rideuta.com/utahfo/howToRide/transitInformation/howToRideBicycleTransRules.aspx	X	X	X					2002		2000	
Central Contra Costa Transit Authority	Concord	CA	4,500,000	480,000	131	200	http://www.cccta.org/CountyConnection.html	2000	2000									
Ann Arbor Transportation Authority	Ann Arbor	MI	4,390,000	205,000	64	81	http://theride.org/bike.asp	2002										
Town of Vail	Vail	CO	3,200,000	5,000	35	30		1990									1990	
Springs Transit	Colorado Springs	CO	3,100,000	180,000	76	250		1998	2004								1999	2004
Kelowna Regional Transit System	Kelowna	British Columbia	2,823,000	103,000	49		http://www.busonline.ca/regions/kel/transitplus/bike_and_ride.cfm	1998										
Whistler & Valley Express	Whistler	British Columbia	2,804,000	9,000	24		http://www.busonline.ca/regions/whi/transitplus/bike_and_ride.cfm	1998										
Tompkins Consolidated Area Transit	Ithaca	NY	2,800,000	97,000	62	491	http://www.tcatbus.com/bobcat.shtml	1996	1996				2001				2004	
Whatcom Transportation Authority	Bellingham	WA	2,795,000				http://www.ridewta.com/bikes.html	X										
Kamloops Transit System	Kamloops	British Columbia	2,287,000	71,000	40		http://www.busonline.ca/regions/kam/transitplus/bike_and_ride.cfm	1998										
Wichita Transit	Wichita	KS	1,800,000	320,000	51	526												
Stark Area Regional Transit Authority	Canton	OH	1,700,000	380,000	88	560											2003	
Brownsville Urban System	Brownsville	TX	1,611,000	140,000	38	87		2001										
Massachusetts Bay Transportation Authority	Boston	MA	1,100,000	4,700,000	2,136	3,200	http://www.mbta.com/traveling_t/usingthet_bikes.asp	X			X	X		X				
City of Visalia - Visalia City Coach	Visalia	CA	1,093,000	92,000	30	40		1990									2004	
Clallam Transit System	Port Angeles	WA	800,000	65,000	30	1,750		1995	1995								2000	
AMTRAN	Altoona	PA	707,000	70,000	27	25		1999									1999	
Space Coast Area Transit	Cocoa	FL	700,000	505,000	55	427	http://www.ridescat.com/maps-schedules/bikeonbus.php	1995					2001			1996		
Grand Valley Transit	Grand Junction	CO	700,000	50,000	20			2000	2000									
San Joaquin Regional Rail Commission	Stockton	CA	620,000	3,500,000	24							1998					1998	
Mountain Express	Crested Butte	CO	500,000	2,000	17	10		1980-1989										
Town of Breckenridge Free Ride	Breckenridge	CO	408,000	3,000	16	6		1997									2001	
Penticton Transit System	Penticton	British Columbia	319,000	28,000	6		http://www.busonline.ca/regions/pen/transitplus/bike_and_ride.cfm	1998										
Fort Smith Transit	Fort Smith	AR	190,000	80,000	17	53	http://www.fsark.com/Transit/Bike-n-Ride.html	2002										
Ride Glenwood Springs	Glenwood Springs	CO	140,000	8,000	3												2000	
Mountain Transport	Durango	CO		40,000	14	100												

*Statistics that were not provided by the survey respondents were taken from the National Transit Database and transit agency web pages.

**Active fleet includes bus, rail, van, paratransit, and all other vehicles operated by the transit agency.

***Several survey respondents provided information about specific bicycle services without listing the date that the services started. These services have an "X" listed for year established.

ing bicycle and transit programs. It includes a brief description of the most common bicycle services currently offered by transit agencies in North America and addresses issues that are common to many types of bicycle and transit integration, such as marketing, policies and standards, and monitoring performance.

The next four chapters address the main types of bicycle and transit integration.

- Chapter three—bicycle-on-bus services.
- Chapter four—bicycle-on-rail services.
- Chapter five—bicycle on other types of transit, such as vanpools and ferries.
- Chapter six—bicycle parking.

Each of these four chapters include detailed descriptions of the bicycle services and addresses issues such as cost, levels of use, maintenance, rules and restrictions, safety and security, training and education, and customer satisfaction. Innovative aspects of each bicycle service are also discussed. Case studies are used to illustrate key issues in each chapter.

Chapter seven is a summary of findings and suggestions for further research.

CHAPTER TWO

SUMMARY OF EXISTING PROGRAMS

OVERVIEW OF BICYCLE AND TRANSIT INTEGRATION PROGRAMS

Many transit agencies currently provide bicycle-related services. The 2002 National Transit Database includes 548 agencies in the United States with service area populations of more than 20,000 (*23*). According to the survey conducted for this report and Bikemap.com (*21*), at least 101 U.S. transit agencies offer bicycle-on-bus or bicycle-on-rail services. An even larger number of agencies provide bicycle parking at transit stops and stations.

The 56 transit agencies that participated in the on-line survey offered many types of bicycle services, including bicycle racks on the front of buses (Figure 3), bicycle racks in rail cars, bicycle-on-vanpool vehicles, bicycle storage space on ferries, and bicycle racks and lockers at stations. The general categories of bicycle and transit integration are described here.

Bicycle on Bus

Bicycles are accommodated on buses in several different ways. The method used by most transit agencies is to mount a bicycle rack on the front of the bus. Front-mounted racks commonly carry two bicycles; however, more agencies are experimenting with racks that can hold three to five bicycles. Customers are responsible for loading and securing their bikes on the racks, and the racks can be folded up against the front of the bus when they are not in use.

Some local bus services allow passengers to bring their bicycles on board. However, this method of bicycle accommodation is often restricted to prevent crowding. Bus drivers are typically given the authority to decide when to allow bicycles on the bus, which tends to be when available bus bike racks are full, after dark, or when bus service is infrequent (bicycles are often allowed on board if the bus is the last bus on the route or if there will be a long wait before the next bus).

Some commuter buses are equipped with extra storage space for luggage and other packages. Several agencies that responded to the survey allow bicycles to be stored in this space, typically located in a compartment below the floor of the bus.

Bicycle on Rail

A number of light rail, heavy rail, and commuter rail systems accommodate bicycles by allowing them inside train cars. One method of accommodation is to require bicyclists to board designated rail cars and remain with their bikes in designated areas. Agencies reported that between 2 and 16 bicycles could be accommodated per train in this manner, depending on restrictions. Some rail cars have special bike racks or hooks where bicyclists can store their bikes (see Figure 4). One responding transit agency provides a designated bicycle car with space for 17 bicycles in each train set (see the case study on the San Joaquin Regional Rail System in chapter four).

It is common for transit agencies to prohibit bicycle access on train cars during peak travel times. This is done to reduce congestion on the train and to reduce friction in boarding and exiting the train. An independent analysis of 47 transit agencies found that only a few urban rail systems in the United States prohibit bicycles at all times (*22*). The same analysis showed a nearly even divide between agencies that restrict bicycle access during peak hours and those that allow bicycles at all times. There are no time restrictions on bicycle access for

- Five of 13 (38%) heavy rail systems,
- Ten of 21 (48%) light rail systems, and
- Seven of 16 (44%) commuter rail systems.

Bicycle on Ferry, Vanpool, and Taxi

Although bicycle-on-bus and bicycle-on-rail services are offered by many public transit agencies, other types of bicycle and transit integration include bicycle-on-ferry, bicycle-on-vanpool, bicycle-on-bus services in mountain communities, and accommodating bicycles along with on-demand transit services.

Bicycle Parking and Staffed Bicycle Parking

Bicycle parking includes bicycle racks, bicycle lockers, and staffed bicycle parking facilities (also referred to as bike stations). These facilities help organize where bicycles are parked, reducing the clutter of bikes that are locked beside fences, trees, signs, etc. Bicycle parking is often installed at train sta-

FIGURE 3 Bicycle rack on the front of a bus—Winston–Salem Transit Authority. (*Source:* Toole Design Group.)

FIGURE 4 Special rail car bike rack—Twin Cities Metro Transit. (*Source:* Michael Jackson, Maryland DOT.)

tions, park-and-ride lots, bus terminals, local bus stops, and other transit hubs.

Lockers are designed to provide more secure bike storage. They tend to be used to store bikes overnight or during the daytime. Lockers are usually installed at major transit hubs. Racks take up less space and tend to allow easier access to parked bicycles (bicyclists typically use their own lock at bike racks, whereas bicyclists are often required to rent a key to access a bike locker). Racks are usually provided at many locations throughout a transit system. One agency reports that bike racks can be easier for station attendants to watch over than bike lockers.

Staffed bicycle parking facilities offer convenient services to bicyclists, such as bicycle parking, repairs, rentals, restroom and changing facilities, and car sharing services. These facilities are often located at interfaces with major transit hubs so that bicyclists and transit users can easily move between modes.

PURPOSES OF BICYCLE AND TRANSIT INTEGRATION PROGRAMS

Although the transit agencies that provided information for this report offered a wide range of services, many agencies cited similar reasons for providing bicycle services. One of the primary reasons transit agencies chose to integrate bicycles and transit was to increase transit ridership. Agencies felt that their bicycle services could increase transit ridership by

- Extending the range that customers can travel to reach transit stops and stations,
- Increasing the flexibility that passengers have to reach destinations at the end of a transit trip,
- Providing "seamless" transportation between bicycle and transit modes, and
- Offering an additional amenity to customers that increases the attractiveness of transit.

Transit agencies also suggested many other reasons for providing bicycle-related services including:

- Increasing the number of multimodal trips made in a community;
- Removing motor vehicles from roads and parking lots so that space can be used by others;
- Enhancing the quality of life in the community by reducing air pollution and automobile traffic congestion;
- Increasing the visibility of bicycling as a viable transportation option;
- Improving the public image of transit to generate allies in the bicycling community who support additional transit funding;
- Contributing to regional commuter assistance programs;
- Providing an alternative for bicyclists so that they can bypass areas that are barriers to bicycling, such as bridges,

tunnels, steep hills, roads with traffic, and avoid riding at night or during adverse weather conditions (see Figure 5); and
- Providing public infrastructure to support active living and prevent health problems related to a lack of physical activity.

LOCAL DIFFERENCES IN BICYCLE AND TRANSIT INTEGRATION

Although the bicycle services described in this report are classified into distinct categories with similar characteristics, each bicycle and transit service is designed to meet the unique needs of the transit system and the community. A particular program or set of bicycle services may be successful for one agency, but may not be successful for a community with different characteristics. Factors that can influence the type of service provided include:

- Transit ridership characteristics (headways, peak user volumes, overcrowding, etc.),
- Climate,
- Design of transit vehicles and transit access areas,
- Local land use patterns,
- Bicycle access to transit; the quality and connectivity of bicycle facilities in the community,
- Socioeconomic characteristics of the local population,
- Influence of advocacy groups,
- Transit funding,
- Authority of the transit agency to make policy decisions, and
- Political leadership.

FIGURE 5 Bicycle-related services provide bicyclists with means to bypass barriers to bicycling, in this case a bridge—New Jersey Transit. (*Source:* Michael Rosenthal.)

COMMON ASPECTS OF BICYCLE AND TRANSIT INTEGRATION PROGRAMS

Although there are a variety of types of bicycle and transit integration, most of these services have several issues in common, including developing initial support, obtaining funding, marketing, establishing policies, and monitoring performance. Each of these issues is addressed in this section of the report.

Developing Initial Support

Support for integrating bicycles with transit service can come from several different groups. Bicycle advocacy groups commonly lead the support for transit agencies to establish bicycle services. Other groups that have helped support bicycle and transit programs include:

- State and local governments,
- Elected officials,
- Environmental groups,
- Health promotion groups,
- Students,
- Businesses and advertising agencies, and
- Staff within transit agencies

Funding

Agencies have found a variety of ways to fund the equipment, maintenance, and staff support for bicycle services. Other major players in funding bicycle-related transit improvements are state DOTs, regional agencies, and local jurisdictions. Some agencies that responded to the survey covered the initial capital cost of their bicycle services exclusively with state and federal funds, whereas others combined their own funds with state and federal grants. Most agencies (including all of the Canadian agencies) however covered the entire cost within their own budgets. It was even more likely for the agencies to cover the costs of maintenance on their own.

In addition to fares and transit agency operating budgets, local sources of funding include property taxes, sales taxes, hotel taxes, and business and individual donors. State sources include funding from state DOTs and other state matching grants. Federal sources included FTA Section 5307 and Section 5309 Formula Funds, the CMAQ program, and Surface Transportation Program Enhancement Funds.

Several respondents to the survey noted that they would like to provide additional services, but did not have adequate funding to do so.

Marketing

Marketing increases public awareness about bicycle and transit services. Thirty-two of the 56 responding transit agencies used some type of marketing program (see Figure 6). Marketing programs offered by these agencies included one or more of the following marketing techniques:

- Brochures;
- Transit agency websites;
- State or regional websites providing links to local transit agency bicycle service information;
- Information in riders' guides and other standard transit publications;
- Posters (on buses and trains, at stations and stops, and in other public places);
- Newspaper and magazine advertisements;
- Demonstrations of how to load bus bike racks at public events;
- Promotion of bicycle services in informational videos and advertisements; and
- Kickoff events with free fares, water bottles, etc.

There was a significant range in the cost of marketing programs used by transit agencies. Some agencies used only staff time to implement their marketing efforts. Others spent up to $50,000 marketing their bicycle services. Most agencies reported that the time and money spent on marketing efforts helped increase the awareness and use of the services. Agencies however were not as satisfied with the effectiveness of marketing programs for bike parking. One agency reported that this advertising was only somewhat effective because it only reached existing transit users, not bicyclists who were potential users.

Some agencies have taken advantage of partnerships with other government agencies and the private sector to advertise their bicycle and transit programs. For example, some local bicycle advocacy groups have posted information about the bicycle services on their websites (British Columbia Transit), and there are several examples of transit agencies that have offered advertising space to local businesses on bike racks in return for funding assistance (Penticton Transit, British Columbia Transit). Representatives of a mayor's bicycling education program staged demonstrations of bike-on-bus racks at many events to provide hands-on training to potential bicyclists [Chicago Transit Authority (CTA)].

Establishing Policies

Agencies commonly set policies to restrict the types of bicycles, ages of bicyclists, and time periods that bicycle services are provided. In some agencies, these policies are approved at the highest levels within the agency, although in other agencies, mid-level staff create and approve the policies. Some agencies have established policies for their bicycle services and have posted them online (see Appendix A).

Monitoring Performance

Performance of bike-on-transit programs has been assessed both qualitatively and quantitatively. Qualitative assessments of a bicycle service can be based on input from transit agency staff (e.g., bus drivers, train station managers, transit planners), transit customers, and the community as a whole. Although qualitative feedback can be gathered through surveys and interviews, it is often received informally from bicycle and transit advocates in the community.

Responses from the 56 transit agencies showed that most had a qualitative understanding of how different groups felt about their bicycle services. Bicyclists as a whole were very satisfied with any bicycle and transit integration services that were being offered. Transit users were either neutral or positive about accommodating bicycles, regardless of the type of bicycle and transit integration.

Quantitative measurements include counts of bicyclists on buses, trains, or ferries; counts of bikes parked at transit stations; inventories of bicycle parking spaces; and surveys of bicyclists on the transit system. Counts of riders and parked bicycles are often taken manually by bus drivers or transit agency staff. In one example, the Central Ohio Transit Authority (COTA) has established an automated system for counting the number of bicyclists using its bike-on-bus service (see the case study later in this chapter). In addition, a California transit agency has developed a bicycle counter as a part of its bus bicycle racks. Sensors in the two bike tire slots count each bicycle that is placed on the rack. Surveys have been used less frequently than counts because of the additional time required to develop and administer them.

Many of the agencies that participated in this study were interested in collecting additional data about their bicycle-on-transit users, in particular, agencies that did not know how many bicyclists used their services. Agencies reported that they would like to collect the following types of data, if the resources were available:

- Counts of bicyclists using transit services at different times of day (peak vs. off-peak),
- Counts of bicyclists who are turned away because of inadequate capacity,
- Bicycle transit user origin and destination surveys,
- Socioeconomic characteristics of customers using bicycle services (income, automobile ownership, etc.),
- Purposes of bicycle-on-transit trips,
- Time of day bicycle-on-transit trips are taken, and
- How a bike-on-transit customer would reach his or her destination if the bicycle service was not provided.

None of the agencies that were surveyed had established performance measures to evaluate the quality of bicycle services that they provide.

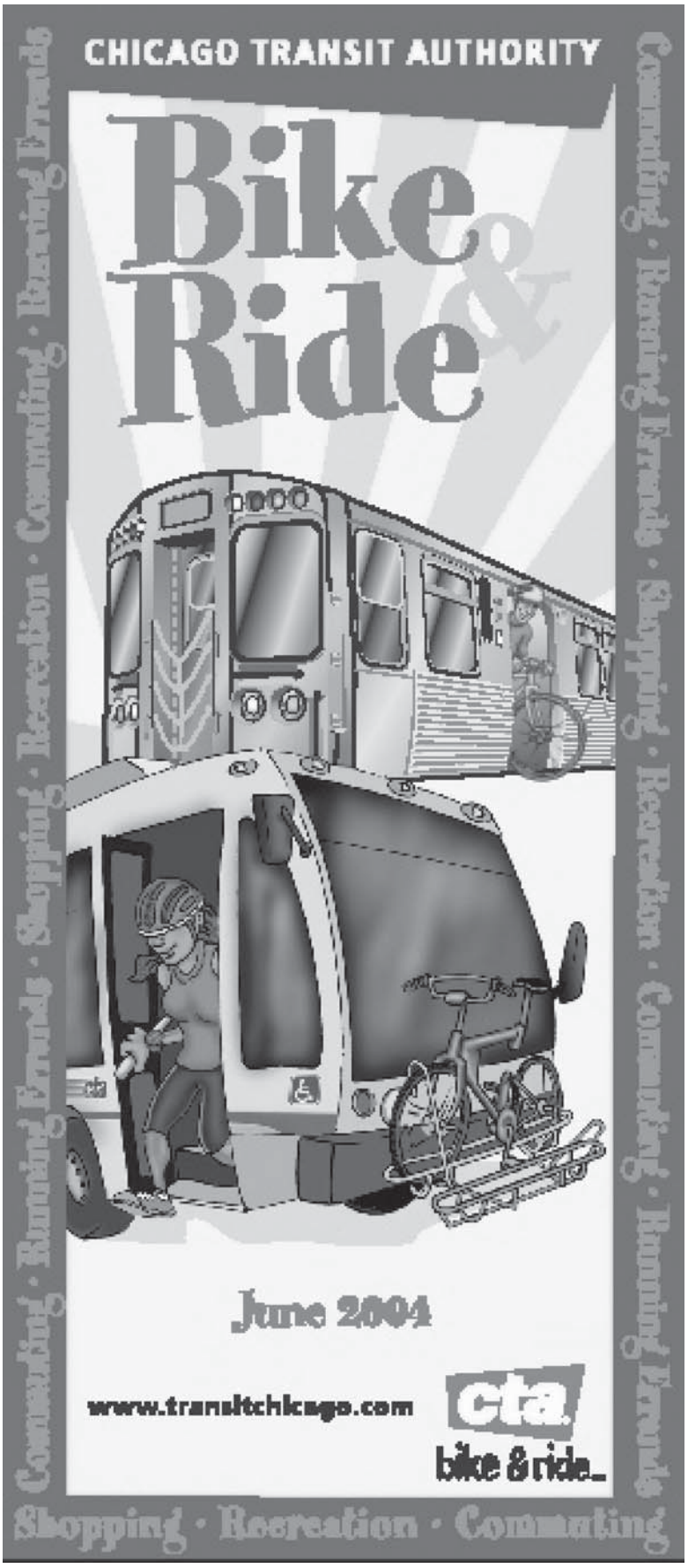


FIGURE 6 Chicago Transit Authority bike-on-transit marketing program.

FIGURE 7 Advanced mobile data terminal—Central Ohio Transit Authority.

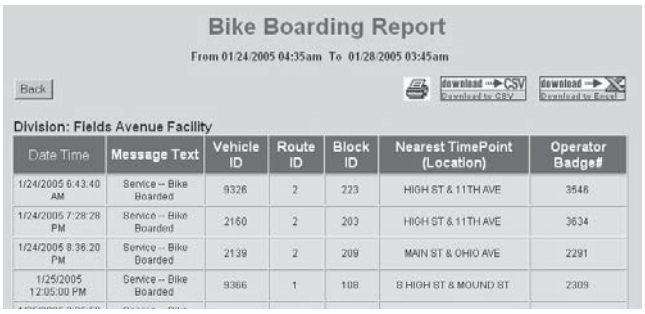


FIGURE 8 Bike boarding report provides data on bike-on-bus boardings from agency intranet—Central Ohio Transit Authority.

Monitoring Bike-on-Bus Boardings

Central Ohio Transit Authority (COTA)—Columbus, Ohio

COTA added front-mounted bike racks to its entire fleet of 275 buses in September 2004. Using existing advanced mobile data terminals (AMDTs) previously installed on the buses (see Figure 7), the AMDT touch pads were programmed so that drivers could document each bicycle boarding. Once a passenger boarding the bus deploys a bike rack for loading, the driver simply touches the AMDT on-screen prompts necessary to record a bike boarding. The AMDT allows the transit agency to monitor bike on bus use on each route and identify trends in bike on bus use over time. The touch pads are also coordinated with COTA's wireless automated vehicle locator system, which keeps track of the locations of all buses throughout the central Ohio area. Coordinating the touch pads with the automated vehicle locator system makes it possible for analysts to download data about the locations of bike on bus boardings from the agency intranet, including the specific bus, time of day, date, and closest intersection to where the bike was placed in the bus rack (see Figure 8).

COTA's bike-on-bus program has been well-received by the public, as shown by positive customer e-mails and media coverage. Information from the touch pads was used to calculate total boardings over a one-week period when free fares were given to bicyclists who used the bus. More detailed bicycle boarding data from the automated monitoring system are available on request. However, no formal data have been prepared for the general public because the program has been

TABLE 2
EXAMPLE OF AGENCIES IMPROVING BICYCLE ACCESS TO TRANSIT FACILITIES

Transit Agency (Location)	Involvement with Bicycle Access Improvements
Washington Metropolitan Area Transit Authority (WMATA) (Washington, DC)	Construction of a new rail station included providing part of a major new shared-use path facility. In addition, WMATA has provided bicycle lockers at many Metrorail stations.
Regional Transportation District (RTD) (Denver, CO)	Pedestrian/bicycle bridges are to be built as a part of two upcoming projects. These bridges will provide pedestrian/bicycle access to stations from surrounding communities and from some bike and multi-use trails. Additionally, RTD has invested jointly in a series of bridges that will improve access to and from Denver Union Station and neighborhoods northwest of Denver.
Fort Smith Transit (Fort Smith, AR)	Established two goals related to bicycle access to transit: (1) work jointly with the city's Engineering Department to construct sidewalks in areas that restrict access to transit shelters; (2) unite efforts with the Parks Department to locate transit shelters and bike parking at trailheads where bike routes and transit routes intersect.
Kelowna Regional Transit System (Kelowna, British Columbia)	The city of Kelowna, which is a partner in providing the transit service, has an extensive network of bike lanes and bike routes.
New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ)	Coordinates station improvements with local development where possible. It also provides bike and pedestrian access through multi-agency programs like New Jersey's Transit Villa ge" program.
Ride Glenwood Springs (Glenwood Springs, CO)	Completed a bus stop access plan that includes bike and pedestrian access/facilities at transit stops.
Town of Vail (Vail, CO)	Spent more than $5 million in the last 15 years to build bike paths. The town also operates the transit system.
TransLink (Greater Vancouver, British Columbia)	Funded development of bike routes that connect to transit facilities (bus routes, light rail stations, commuter rail stations, and ferry terminals).
Brownsville Urban System (Brownsville, TX)	Participated in the local MPO hike and bike plan to incorporate transit connections. Will be constructing a bus transfer station on a planned hike and bike trail.
Chicago Transit Authority (Chicago, IL)	Periodically collaborated with Chicago DOT on access issues.

in operation for less than one year, and COTA is continuing to train drivers to record bike boardings by means of the AMDTs.

Some bus operators raised initial concerns about the extra task of keying in each bicycle boarding. However, operator training sessions include instruction about using the touch pads, and operators are reported to be using them fairly consistently. A potential improvement to the bicycle-on-bus monitoring system could be to record each time a bicyclist takes their bicycle off the bus, but this would add complexity to the task of monitoring bicyclists.

BICYCLE ACCESS TO TRANSIT

The comfort and safety of bicycle facilities at transit stops and stations is an important aspect of integrating bicycles and public transportation. In many jurisdictions, the transit agency has limited control over conditions on streets and roadways surrounding transit stops and stations and must work with other governmental agencies to make improvements. Nine of the 56 participating agencies reported that they had established partnerships with other agencies to plan and make improvements to bicycle facilities in areas surrounding transit stations (see Table 2). These types of partnerships have the potential to improve bicycle access to transit services (see Figure 9).

Directing bicyclists to transit stops and stations is another component of transit access. Several agencies in Maryland have developed successful partnerships with local jurisdictions to improve wayfinding signage to transit stations and bike parking at the stations. King County Metro (Seattle, Washington) and the California DOT (Caltrans) have identified bike station locations on their transit system maps, and Los Angeles Metropolitan Transit Authority (Los Angeles MTA) plans to show the local bikeway network on its new transit maps.

FIGURE 9 Shared-use path adjacent to Washington Metropolitan Area Transit Authority rail station. (*Source:* Toole Design Group.)

SUMMARY

This chapter provided general descriptions of different types of bicycle and transit integration. It also summarized several common issues that transit agencies address when implementing bicycle programs, including funding, marketing, establishing policies, and monitoring performance. The following chapters will provide more in-depth information about bicycle on bus, bicycle on rail, bicycle on other types of transit, and bicycle parking services.

CHAPTER THREE

INTEGRATION OF BICYCLES WITH BUS TRANSIT SERVICES

Bicycle-on-bus service provides bicyclists with several benefits, including the convenience of riding a bicycle to a bus stop and to the final destination and the flexibility to take the bus in bad weather, after dark, or if a bicyclist needs to travel through an area with steep hills, heavy traffic, or other areas that are barriers to bicycling (e.g., for people who bicycle to and from work).

Although these benefits are similar to the benefits of bike-on-rail services, bus systems typically have more routes, serve more neighborhoods, and provide access to more destinations. Because most buses use exterior-mounted racks, there is no impact on bus passenger capacity. In addition, less effort is usually required to place a bike on a bus bike rack. Although a bike can be loaded on a bus immediately at a bus stop, trains are accessed from a platform, which often requires the bicyclist to carry the bike up or down a staircase, escalator, or elevator and through some type of turnstile.

Bicycle-on-bus service is offered by transit agencies of all sizes, located in all parts of the United States and Canada (see Table 3). The majority of the agencies that participated in this study offered some type of bicycle access on their local bus systems. In contrast to 10 years ago, very few agencies require training or fees to use their bike-on-bus services.

BICYCLE STORAGE AND TRANSPORT

Agencies offering bicycle-on-bus service commonly allow bicyclists to store their bikes on racks mounted on the front of the bus. These front-mounted bus bike racks often have room for two bicycles, although three-, four-, and five-bicycle racks have also been used by several agencies (see Figure 10). The bike rack folds upright on the front of the bus when it is not in use. When bicyclists load their bikes, they pull the rack down so that it is parallel to the ground and secure the bike on the rack before boarding the bus. Although folding racks help reduce the overhang distance added to the bus (compared with racks that do not have the flexibility to fold), the folded racks typically add 6 to 9 in. of length to the bus, which requires additional storage space at the bus yard.

Three-bike bus racks are becoming more common because they provide additional capacity for bicyclists (see the Pinellas Suncoast Transit Authority case study in this chapter). However, these racks tend to extend the bus overhang distance more than two-bike bus racks, which adds to the swept area of the bus. In addition, the three-bike bus racks generally have less space between the front of the bus and the closest bike on the rack, which can cause interference with windshield wipers. They also tend to be wider than two-bike bus racks, which may interfere with headlights and turn signal lights on certain types of buses.

Most agencies prefer front-mounted bus bike racks over rear-mounted racks. In 1976, San Diego Transit installed bike racks on the back of 18 buses and found several problems with this configuration. Rear-mounted racks blocked access to the engine at the back of the bus, making it difficult to service the engine. The rear-mounted racks also caused problems because drivers could not see the racks and monitor the safety and security of bicyclists as they loaded and unloaded their bikes (*6*). Some agencies also experienced problems with bikes being dirtied by exhaust from the back of the bus. Rear-mounted racks with a capacity of five bikes are currently being used by Mountain Express, a small agency (17 buses) in Crested Butte, Colorado, to provide extra capacity during summer months. These buses have a video camera that shows the driver the back of the bus. Mountain Express provides front-mounted bike racks year-round.

Some transit agencies allow bicycles to be taken on board the bus. However, many agencies restrict bicycle access in the bus to prevent overcrowding. These agencies often give bus drivers the discretion to decide whether bicycles are allowed inside the bus. Drivers are more likely to allow bicycles inside the bus when the racks are full, at night, or when service is infrequent (when the bus is the last bus of the evening on a particular route or there is a long wait before the next bus).

Bus Bike Racks with Capacity for Three Bicycles

Pinellas Suncoast Transit Authority—Clearwater, Florida

The Pinellas Suncoast Transit Authority (PSTA) first installed front-mounted bicycle racks on its buses in 1998. Each of these racks provided space for two bicycles. As more bicyclists took advantage of the service, it became more common for both spaces on the bicycle rack to be full, resulting in bicyclists having to wait for the next bus. In 2004, PSTA addressed this capacity problem by mounting racks with space for three bicycles on the front of its buses (see Figure 11). The current bus fleet includes 57 buses with three-bicycle racks and 111 buses with two-bicycle racks. PSTA tries to provide buses with the three-bicycle racks on routes with more bicyclists.

TABLE 3
BICYCLE-ON-BUS SERVICES

Type of Service	Transit Agencies (Location)
Front-mounted racks that can hold two bicycles	AMTRAN (Altoona, PA) Ann Arbor Transportation Authority (Ann Arbor, MI) Brownsville Urban System (Brownsville, TX) Calgary Transit (Calgary, Alberta) Central Florida Regional Transportation Authority (LYNX) (Orlando, FL) Central Ohio Transit Authority (Columbus, OH) Chicago Transit Authority (Chicago, IL) City of Visalia—Visalia City Coach (Visalia, CA) Clallam Transit System (Port Angeles, WA) Fort Smith Transit (Fort Smith, AR) Grand River Transit (Kitchener, Ontario) Grand Valley Transit (Grand Junction, CO) Hillsborough Area Regional Transit (HARTline) (Tampa, FL)* Kamloops Transit System (Kamloops, British Columbia) Kelowna Regional Transit System (Kelowna, British Columbia) Long Beach Transit (Long Beach, CA) Los Angeles Metropolitan Transportation Authority (Los Angeles, CA) Maryland Transit Administration (Baltimore, MD) Metropolitan Transit Authority (Los Angeles, CA) New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ) Orange County Transportation Authority (Orange, CA) Penticton Transit System (Penticton, British Columbia) Pinellas Suncoast Transit Authority (PSTA) (Clearwater, FL) Regional Transportation District (RTD) (Denver, CO) Rochester–Genesee Regional Transportation Authority (Rochester, NY) San Diego Metropolitan Transit System (San Diego, CA) Southeastern Pennsylvania Transportation Authority (Philadelphia, PA) Space Coast Area Transit (Cocoa, FL) Springs Transit (Colorado Springs, CO) Tompkins Consolidated Area Transit (Ithaca, NY) TransLink (Greater Vancouver, British Columbia) Tri-County Metropolitan Transportation District (TriMet) (Portland, OR) Utah Transit Authority (Salt Lake City, UT) Victoria Regional Transit System (Victoria, British Columbia) Washington Area Metropolitan Transit Authority (Washington, DC) Whistler & Valley Express (Whistler, British Columbia)**
Front-mounted racks that can hold three bicycles	Broward County Transit (Pompano Beach, FL) Clallam Transit System (Port Angeles, WA) Long Beach Transit (Long Beach, CA) Pinellas Suncoast Transit Authority (PSTA) (Clearwater, FL)
Oversized bike racks on the front and back of buses. Each rack carries four or five bikes	Mountain Express (Crested Butte, CO)
Bikes may be brought on board the bus at any time	Grand River Transit (Kitchener, Ontario)
Bikes may be brought on board the bus at driver's discretion and/or under certain conditions	Clallam Transit System (Port Angeles, WA) Kamloops Transit System (Kamloops, British Columbia) Orange County Transportation Authority (Orange, CA) Regional Transportation District (RTD) (Denver, CO) Space Coast Area Transit (Cocoa, FL) Utah Transit Authority (Salt Lake City, UT)

*Bicyclists must obtain a permit to use the bus bicycle racks.
**Racks are in place from mid-April until mid-November, when they are replaced by ski racks.

FIGURE 10 Front-mounted bus bicycle rack. (*Source:* Pinellas Suncoast Transit Authority.)

FIGURE 11 Front-mounted bus bicycle rack with space for three bikes—Pinellas Suncoast Transit Authority.

Many of the new bike racks were filled by three bikes within days of starting the program. The positive impact of the three-bike racks was also demonstrated through the anecdotal evidence of fewer bicyclists being left behind by buses with full bike racks. With the additional capacity provided by the new racks, bicycle-on-bus boardings increased by approximately 8% over one year, from 39,862 in 2003 to 43,096 in 2004.

Most of the buses were retrofitted with the three-bike racks by PSTA's maintenance staff. However, the agency was able to purchase 10 new buses equipped with three-bike racks.

PSTA noted several challenges to operating buses with three-bike racks. These included a bus overhang area that was 10 cm (4 in.) greater than buses with the two-bike racks, and bikes with wide handlebars that on some buses interfered with the windshield wipers. The bicycle rack manufacturer helped PSTA overcome interference with the windshield wipers by providing aluminum spacers and bolts that moved the bicycles a few inches farther from the bus. This adjustment required less than 5 min of maintenance work per rack. PSTA noted that the three-bike racks are likely to be the highest-capacity racks that can be provided on its buses, given the practical limits of its system.

Several of the responding agencies operate commuter bus systems that allow bicycle access. Although some commuter buses are equipped with the same type of front-mounted bike racks as local buses, several allow bicycles to be stowed in luggage storage areas (see Table 4).

Over time, agencies have made adjustments to improve their bicycle-on-bus services. Examples of these changes include:

- Providing bus bike racks on additional types of buses and additional routes,
- Changing from service in warm months only to year-round service,
- Making minor adjustments to the configuration of racks to make them easier for bicyclists to use,
- Adding deployment indicator lights so that bus drivers can tell when the rack is down (see the COTA case study in chapter two),
- Removing fees or permit requirements for bringing bikes on buses, and
- Removing requirements for bike-on-bus training courses.

TECHNICAL SPECIFICATIONS AND DESIGN

Although some transit agencies have manufactured their own bus bicycle racks [e.g., Mountain Express and Grand Valley Transit (Grand Junction, Colorado)], most agencies responding to the survey use racks manufactured by private compa-

TABLE 4
BICYCLE-ON-COMMUTER BUS SERVICE

Type of Service	Transit Agencies (Location)
Front-mounted racks that can hold two bicycles	Central Florida Regional Transportation Authority (LYNX) (Orlando, FL) Central Ohio Transit Authority (Columbus, OH) Regional Transportation District (RTD) (Denver, CO)
Front-mounted racks that can hold three bicycles	Springs Transit (Colorado Springs, CO)
Bicycles stowed in luggage/baggage storage areas	Alameda–Contra Costa Transit District (AC Transit) (Oakland, CA) New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ) Regional Transportation District (RTD) (Denver, CO) Springs Transit (Colorado Springs, CO)

nies. Of the 30 agencies that reported the name of the company that manufactured their bus bike racks, 28 used the same company. Although many different bus bike rack designs have been developed, agencies with bus fleets that include a variety of makes and models can sometimes have difficulty equipping certain types of buses with bike racks.

USAGE PATTERNS AND USER DEMOGRAPHICS

The number of bicyclists that use bicycle-on-bus services varies by agency. Agencies reported serving as few as 20 and as many as 575,600 bicyclists per year (see Table 5). In general, higher numbers of bicycle users were recorded by communities with larger transit systems, in communities in which bus bike racks are provided on all (or large percentages) of their buses, and in areas with warm climates.

Although most agencies do not use surveys to collect data about bicycle users, several transit agencies reported anecdotally that different types of people use bicycle-on-bus services. Young adults, students, and low-income commuters were mentioned most often. According to the transit agencies, people use the bus bike racks for both transportation and recreational purposes, although the purposes of the trips depended on the types of destinations served by the agency (e.g., bus systems in resort areas tended to serve more bicyclists making recreational trips).

TABLE 5
BIKE-ON-BUS RIDERSHIP LEVELS FROM SELECTED TRANSIT AGENCIES

Transit Agency (Location)	No. of Bicycle Trips Served Annually
San Diego Metropolitan Transit System (San Diego, CA)	575,600
Broward County Transit (Pompano Beach, FL)	380,025
Long Beach Transit (Long Beach, CA)	100,000
Hillsborough Area Regional Transit (HARTline) (Tampa, FL)	93,000
Kelowna Regional Transit System (Kelowna, British Columbia)	75,000
Space Coast Area Transit (Cocoa, FL)	50,000
Springs Transit (Colorado Springs, CO)	42,700
Kamloops Transit System (Kamloops, British Columbia)	35,000
Clallam Transit System (Port Angeles, WA)	25,000
Regional Transportation District (RTD) (Denver, CO)	545,000*
Tompkins Consolidated Area Transit (Ithaca, NY)	18,000
Grand Valley Transit (Grand Junction, CO)	16,800
Whistler & Valley Express (Whistler, British Columbia)	16,000
Ann Arbor Transportation Authority (Ann Arbor, MI)	13,094
Mountain Express (Crested Butte, CO)	7,027
Central Ohio Transit Authority (Columbus, OH)	6,500
Penticton Transit System (Penticton, British Columbia)	3,000
Calgary Transit (Calgary, Alberta)	500
AMTRAN (Altoona, PA)	Fewer than 20

*Does not include weekends.

Bicycle-on-bus use has increased over time for nearly all of the agencies that participated in the survey. Most had anecdotal evidence of these increases, but several agencies had collected historical data to describe how many bicyclists used the service at different times (for examples see Table 6).

One of the most commonly cited challenges for bicycle-on-bus programs was limitations on capacity. Several agencies reported having to turn away bicyclists because the racks were full, especially during peak travel times [Ann Arbor (Michigan) Transportation Authority, Broward County Transit (Florida), Calgary Transit, Clallam Transit System (Port Angeles, Washington), Regional Transportation District (RTD, Denver, Colorado), Kelowna Regional Transit System (British Columbia), San Diego Metropolitan Transit System, Space Coast Area Transit (Cocoa, Florida), Whistler & Valley Express (Whistler, British Columbia)].

REACTIONS TO SERVICE FROM DIFFERENT GROUPS

Transit agencies were asked to discuss bicyclists' responses to their bike-on-bus programs. Nearly all of the agencies (30 of 32) reported that bicyclists had given positive feedback about the service. Most agencies also reported anecdotally that regular transit users, transit agency staff, and the general public had positive reactions to bicycle-on-bus services, although there were a few more neutral reactions to the service from these groups.

The reactions of bus drivers to bike-on-bus service were mixed (12 agencies reported positive, 16 reported neutral, and 3 reported negative reactions). Bus driver concerns included:

- Safety (additional risk of running into parked cars, pedestrians, and other objects with bicycle racks on the front of buses),
- Personal liability for damage to bicycles,
- Losing time and not being able to keep a strict route schedule, and
- Additional work with no additional pay (having to watch bicycles or provide assistance to bicyclists, etc.).

Bus drivers and some bus driver unions raised initial objections to accommodating bicycles, but these groups generally became more supportive of the service when they learned

TABLE 6
CHANGES IN BIKE-ON-BUS USE OVER TIME

Transit Agency (Location)	Year Bike-on-Bus Service Started	Description of Changes in Use
Ann Arbor Transportation Authority (Ann Arbor, MI)	2002	Increased from 11,145 to 13,045 bicyclists (17%) in second year.
Hillsborough Area Regional Transit (HARTline) (Tampa, FL)	1995	33.5% increase from FY 2003 to FY 2004.
Mountain Express (Crested Butte, CO)	1980s	Bikes increased from 5,400 to 7,000 between 1998 and 2004.
Penticton Transit System (Penticton, British Columbia)	1998	Use has increased gradually since the racks were introduced. The system now carries about 10 bikes per day.
Regional Transportation District (RTD) (Denver, CO)	1992	Summer 2000 (local and limited service) = 1,559 bike boardings. Summer 2004 (local and limited service) = 2,614 boardings. Increase in bike boardings by 68%.*
Tompkins Consolidated Area Transit (Ithaca, NY)	1996	Systemwide use increased from 500 uses a month to 1,500 uses a month during the first three years.

Note: Includes agencies that responded with specific numbers.
*Weekday, single-day counts.

more about it. For example, Hillsborough Area Regional Transit (HARTline, Tampa, Florida) found that drivers were much more accepting of bicycle racks when they learned that the cyclist is required to load his or her own bike and the driver has no role in the loading process. Initially, Grand River Transit bus operators expressed concern that they would take on personal liability for any damage to bicycles caused by using the racks. They also expressed concern about delays to boarding time. The agency helped mitigate these worries with demonstrations that showed how easy the bus bike racks were to use. None of the responding agencies needed to change route schedules to accommodate additional time for bicycle loading and unloading.

Small Transit Agency Bicycle-on-Bus Program

Fort Smith Transit—Fort Smith, Arkansas

Fort Smith Transit serves the city of Fort Smith [population 80,000, area 186 km² (72 mi²)], which is located near the Arkansas River in western Arkansas. In 2002, the transit agency added bicycle racks to its entire fleet of 17 fixed-route buses for approximately $10,000. According to Fort Smith Transit, the type of rack that they purchased is easy for bicyclists to use, because one bar can lock the wheels of the bike in place (see Figures 12 and 13). According to the agency, the bus bike racks are typically used every day.

Agency representatives have not received any complaints about the bus bicycle racks. After Fort Smith Transit installed its bicycle racks, the local parks department created a plan for bicycling routes in the city to further support bicycle transportation.

One challenge that Fort Smith Transit faced after first purchasing the racks was having the flexibility to switch racks between buses used for fixed-route service (which provides bike racks) and demand-response service (which does not provide bike racks). To solve this problem, the agency's service department designed and installed a short extension to the bike rack that allowed the task of switching racks to be done in less than 5 min.

COSTS

Most agencies paid between $500 and $1,000 to equip each bus with a bike rack. This cost varies depending on the model and quantity of racks that were purchased. A majority of the agencies that provided bicycle-on-bus service (25 of 32) retrofitted their buses with racks. The other seven purchased their bike racks along with new buses, which saved them the labor costs of retrofitting the racks.

The amount of staff time spent on bicycle-on-transit programs depended on the size of the agency. Although most small- and medium-sized bus systems dedicated between a few hours and one week of staff time per year to keeping the bike-on-bus services operating smoothly, some larger transit agencies used full-time staff to run their bicycle programs.

FIGURE 12 Front-mounted bus bike rack—Fort Smith Transit.

FIGURE 13 Easy-to-use, one bar lock, front-mounted bike rack—Fort Smith Transit.

For example, the RTD (Denver) spent time that was equivalent to 1.5 full-time employees per year on planning, customer service, and marketing for all of its bicycle services (including, but not limited to, bicycle on bus).

Three transit agencies reported that the cost of bus bike racks, staff time, and/or monitoring the program was an obstacle to providing more bike racks and better service for bicyclists.

SAFETY AND SECURITY

There have been relatively few safety and security issues related to bicycle-on-bus programs. Most of the transit agencies reported no problems. A few agencies reported only minor problems with injuries to passengers, injuries to pedestrians outside the bus, damage to property on or in the bus, or damage to property in the street.

The most common minor problem cited by transit agencies was damage to bicycles that had been loaded on the bike racks. Several agencies mentioned that in the early stages of their program, bicycles occasionally fell off of the racks or were stolen from the racks while the bus was on its route. In addition, there have been a few occasions where bicyclists were injured while loading their bicycles, because the bus driver started to move the bus without looking to see if there was a bicyclist loading a bicycle on the rack. To address this problem, the agencies have trained bus drivers to watch the bicycles on the racks more closely and to make sure the bicyclists load their bicycles properly.

It can be also difficult for bus drivers to discern if a bus bike rack is deployed. If an empty rack is left down, the driver may not realize that he or she has limited front clearance. Agencies have solved this problem by adding a deployment indicator light that tells the bus driver when the rack is down [COTA and the Central Florida Regional Transportation Authority (LYNX)].

Abandoned bicycles were cited as a problem by several agencies including the Orange County (California) Transportation Authority (OCTA), LYNX, and Long Beach Transit. Such abandoned bicycles may have been stolen and then abandoned or simply forgotten by bicyclists. Bicycles that are left on the bus bike racks take up space that could be used by other bicyclists and require the agency to deal with unclaimed bikes when they return to bus maintenance areas. Hundreds of bikes abandoned on OCTA buses are auctioned off each year. LYNX also has had problems with abandoned bicycles. It relocated its lost-and-found at the main bus terminal and removes abandoned bikes at the end of a single route loop. This freed rack space that normally would have been full until buses returned to the maintenance facility at the end of their run. The Long Beach Police Department assisted Long Beach Transit by picking up bikes that remained unclaimed for more than 30 days.

Some agencies have raised concerns that front-mounted bike racks add length to the bus, making it more difficult to fit buses in the bus storage yard or garage and more difficult to maneuver around tight corners on downtown streets. Another problem cited by transit providers is that bicycles on the front-mounted racks can block headlights on smaller buses. One agency does not allow bicycles on its smaller buses at night because of this concern (TransLink, Greater Vancouver, British Columbia).

RESTRICTIONS AND RULES

Although bicycles are typically prohibited inside buses, fewer restrictions have been placed on using bus bike racks. The only common rule is that bicycles must fit in the bike racks. Some agencies prohibit certain categories of bicycles, including recumbents, tandems, tricycles, unicycles, electric bicycles, or bicycles with wheels less than 20 in. in diameter. Bicycles with crates or baskets are sometimes prohibited because those objects can block the driver's view of the street.

A few agencies prohibit children from using bike-on-bus racks, with minimum ages ranging from 9 to 16 years old. Others allow children if they are accompanied by an adult or have parental permission. One agency mentioned that any person can use the service as long as they can load their bicycle on the rack themselves.

HARTline is the only agency that participated in this study that charges a fee to use their bicycle-on-bus service. Once bicyclists complete a training program on how to use the bus bicycle racks, they are eligible to purchase a bicycle-on-bus permit for $2.50. The same fee is required to renew the permit each year (the training course is taken only once).

TRAINING AND EDUCATION

There are several methods used to educate bicyclists on how to use the bus bicycle racks. The most common is through websites (see list of websites in Table 1); however, explanatory posters, brochures, and other educational materials are also used. A few agencies will provide individual training or bring a demonstration bus bike rack to public events and transit stations.

Bus drivers are provided with instruction on bus bike racks during introductory training and normal instructional courses. This training also includes safety issues, rules and restrictions, and adjusting for extra bus length when making turns. Nine agencies had developed CD-ROMs, presentations, or other educational materials for training and education sessions.

MAINTENANCE

Most agencies noted that the cost of maintaining the bike racks was minimal (one reported that bike rack maintenance represented one-quarter of one percent of their entire maintenance budget). Based on the responses to the survey, the cost to maintain each bike rack is roughly $50 to $100 per year.

Bus bike racks can rust and be damaged easily when buses make contact with other objects or vehicles. Most agencies include these types of repairs as a part of routine maintenance procedures. One agency reported that its bus bike racks were maintained for 6 to 7 years before they needed to be replaced.

Several agencies mentioned that bus bike racks add complexity to other routine maintenance procedures. Maintenance challenges include obtaining replacement parts for broken bus bike racks, difficulty in cleaning the front of the bus, bus washers being damaged by the racks, interference with wipers, the need to remove the rack when a bus is towed, and freezing parts during winter (although such freezing was rare, even in some of the most extreme northern climates). Even with these challenges, maintenance was not typically an obstacle to providing bike-on-bus services.

CHAPTER FOUR

INTEGRATION OF BICYCLES WITH RAIL TRANSIT SERVICES

Bicycles are accommodated on rail transit in a variety of ways, depending on the rail transit mode and provider. Several agencies that participated in this study offered bicycle-on-light-rail, bicycle-on-heavy-rail, and bicycle-on-commuter-rail services. APTA definitions of each mode are as follows:

- Light rail—lightweight, generally electric passenger rail cars on fixed rails, usually running close to traffic; often alongside traffic.
- Heavy rail—electric passenger rail cars, operating on separate rights-of-way, at high speeds and with high volume.
- Commuter rail—electric or diesel passenger rail cars traveling between urban and suburban areas, on separate rights-of-way, with a limited number of stops in the urban center (*24*).

Light rail cars can either be accessed from a platform or area on the street, enabling cyclists to use light rail without entering a station (see Figure 14). Some light rail cars feature low floor designs that are level with the platform. Others, such as San Diego's Trolley, require cyclists to carry their bicycle up stairs to access the inside of the car. Some newer light rail cars are being designed with bike hooks, bike racks, and/or designated areas for cyclists (for examples see Table 7 and Figure 15).

Access to heavy rail services can be challenging to bicyclists because heavy rail is generally located along separate rights-of-way with boardings limited to station stops. To pass through fare gates or turnstile areas into the paid ticket area, bicyclists may be required to use specific access gates or to use street level elevators that go directly to the platform. Many heavy rail systems prohibit bicyclists from using escalators to access platform areas. In addition, bicycles are prohibited on most heavy rail systems during peak hours to prevent overcrowding. Once on board the heavy rail cars, bicyclists are accommodated in a manner similar to other rail transit modes, most often with designated areas or racks for bicycles (for examples see Table 8).

Commuter rail cars are generally accessed from an open platform. On board the commuter rail cars bicycles are accommodated in a variety of ways, such as placing bicycles in designated floor areas, in storage closets or bicycle racks, or in a specific rail car designated for bicycle storage (for examples see Table 9).

ON-BOARD BICYCLE STORAGE AND TRANSPORT

Once on board the rail car, bicycles are commonly stored on racks inside the car or are attended by the individual bicyclists. At least two bicycles per car are commonly allowed and, in rare cases, entire cars are dedicated to bicycle use. Many light rail vehicles provide storage for several bicycles in each car, commonly by allowing bicyclists to stand with the bicycle in available spaces. This storage method is employed by the bulk of light rail providers, as shown in Table 7. Light rail cars may also feature racks or hooks for bicycle storage, as can be found in Portland's TriMet cars. On board Santa Clara Valley Transportation Authority (San Jose, California) light rail, four bicycles are accommodated with racks and an additional two bicycles may be attended to by bicyclists standing in the center of the car.

Dedicated Bicycle Rail Car

Altamont Commuter Express (ACE), San Joaquin Regional Rail Commission—Stockton, California

With a total fleet of 24 commuter rail cars, ACE has dedicated one rail car per train to carrying bicycles (see Figure 16). The dedicated bicycle rail cars serve commuters traveling between San Joaquin Valley suburbs and the employment centers of Silicon Valley. ACE's dedicated bicycle rail cars were retrofitted to accommodate 17 bicycles per car, with an additional 2 to 4 bicycles allowed as overflow on the remaining rail cars (see Figure 17).

ACE's administrator, the San Joaquin Regional Rail Commission, estimates that 8,000 bicyclists are served by this program annually. Dedicating bicycle rail cars has helped reduce conflicts between cyclists and regular transit riders. Regular passengers can move more freely because bicycles use one specific part of the train; bicyclists appreciate having a specific storage space that is designed to meet their needs. Accommodating bicycles has extended the reach of ACE by enabling riders to commute to employment locations not located directly along the rail lines, saving those riders the time and expense of driving a car.

Heavy rail cars may feature a similar storage system, allowing bicyclists to stand in open spaces, often near door areas, as space allows. Heavy rail cars may also be equipped to allow bicyclists the use of available wheelchair fasteners for secure storage. Commuter rail systems may provide dedicated bicycle rail cars, thereby allocating separate spaces for bicyclists and regular transit riders. Commuter rail systems may also accommodate bicycles as light and heavy rail do, by allowing several bicycles in each car except during commute hours.

FIGURE 14 Light rail accessible without having to enter station—Twin Cities Metro Transit. (*Source:* Michael Jackson, Maryland DOT.)

Bicycle Hooks on New "River LINE" Diesel Light Rail

New Jersey Transit Corp.—Newark, New Jersey

New Jersey Transit Corp. (NJ TRANSIT) provides hooks for hanging bicycles on board its 55-km (34-mi) "River LINE" light rail service, inaugurated in March 2004 between Trenton and Camden in the Greater Philadelphia area (see Figure 18). The European-influenced design of the diesel light rail cars on the River LINE incorporates a three-hook panel above flip-up seats in each end of the articulated cars (see Figure 19). This allows some of the interior space to be used flexibly. Although each car can store a maximum of six bikes, the space can also be used for baggage or by seated passengers (see Figure 20).

When the maximum bicycle storage space is needed, three bicycles can be stored vertically at each end of the diesel light rail car. The bicycles are hung with handlebars at the top, offset a bit vertically to overlap the handlebars and conserve space. The top wheel of each bicycle is supported by a hook, and the bottom wheel is placed in a restraining guide either on the side wall or on the bottom of a flip-up seat. Trains on the River LINE consist of one or two cars; therefore, they have space to hold a maximum of 6 or 12 bicycles.

NJ TRANSIT began allowing bicycles on board its regional commuter trains as an amenity in 1992; expanding the service to all commuter lines in 2000. At the same time NJ TRANSIT discontinued a bicycle permit requirement, after experience demonstrated that the agency had no significant issues in having "bikes on board." There is no charge for bringing bicycles on board, but there are peak-period, peak-direction restrictions on the very busy lines in northern New Jersey. Presently, all of NJ TRANSIT's 860 commuter rail cars (on 11 lines statewide) and 65 light rail cars (on three lines) accommodate bicycles, as do half of its 2,000 buses. However, the new River LINE service has been shown to attract the greatest proportion of bicyclists. An informal assessment by the Bicycle Coalition of Greater Philadelphia during the line's first summer showed an average of 1.5 bicycles on observed trains.

TECHNICAL SPECIFICATIONS AND DESIGN

Most light and heavy rail cars do not require complicated design changes to accommodate bicycles. Bicycles are generally stored in empty wheelchair accessible space or held in doorway areas. However, some transit agencies provide hooks and racks on rail cars so that bicyclists do not need to attend to their bicycles at all times. Portland's TriMet provides hooks that suspend the bicycles vertically, resulting in a more efficient use of space. In southern New Jersey, NJ TRANSIT's light rail cars also have hooks. Commuter rail providers ACE/San Joaquin Regional Rail Commission (Stockton, California) and Caltrain, which runs from San Francisco, through San Jose, to Gilroy, have designated bicycle cars. These rail cars were reconfigured to store bicycles by removing seats.

TABLE 7
BICYCLE-ON-RAIL SERVICES

Type of Service	Transit Agencies (Location)
Bicyclists allowed to bring bikes on board and stand in designated areas	Calgary Transit (Calgary, Alberta) Los Angeles Metropolitan Transportation Authority (Los Angeles, CA)* Maryland Transit Administration (Baltimore, MD) New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ) Regional Transportation District (RTD) (Denver, CO)** San Diego Metropolitan Transit System (San Diego, CA) TransLink (Greater Vancouver, British Columbia)* TriMet (Portland, OR)
Bikes stored on racks inside each rail car	Santa Clara Valley Transportation Authority (VTA) (Santa Clara, CA)
Bikes stored on hooks inside each rail car	Metro Transit (Minneapolis, MN) New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ) TriMet (Portland, OR)
Bicyclists allowed on board trains and to stand in designated areas only during off-peak hours	Los Angeles Metropolitan Transportation Authority (Los Angeles, CA) TransLink (Greater Vancouver, British Columbia)

*Bicyclists are not allowed to bring bicycles on board during peak hours.
**Bicyclists are allowed during peak hours if traveling in reverse peak direction only (away from Denver central business district in a.m.; toward Denver central business district in p.m.).

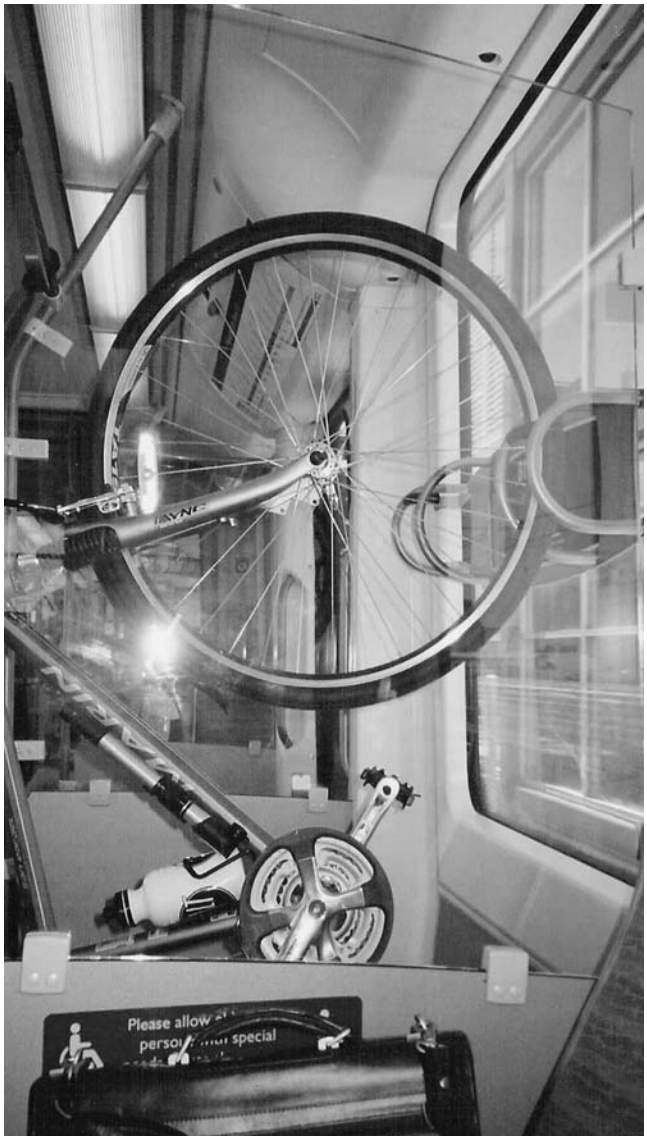


FIGURE 15 Light rail car designed with bike rack—Twin Cities Metro Transit. (*Source:* Michael Jackson, Maryland DOT.)

USAGE PATTERNS AND USER DEMOGRAPHICS

Although few transit providers reported recording bicyclist ridership, ACE estimated providing rail service to 8,000 bicyclists per year. Several other transit agencies, including Calgary Transit, San Diego Metropolitan Transit, British Columbia's TransLink, and Portland's TriMet, reported increasing demand for their bicycle services, indicated by fully loaded bicycle racks and bicyclists queuing up for limited space on rail cars, although no ridership data were available to quantify this trend.

Several transit agencies reported anecdotal evidence that their bike-on-rail services had a broad base of ridership, with bicyclists of all genders and from all income groups. Only the RTD reported user statistics for their bicycle-on-rail transit service. The user statistics came from a survey of bike-on-light-rail permit holders, conducted in 2003. The light rail system in Denver serves urban and suburban communities with varying incomes, and RTD identified the age and income categories of the greatest numbers of bike-on-rail users. The largest user group is that between the ages of 40 and 49, has household income between $50,000 and $74,999, and lives in households with two automobiles.

CUSTOMER SATISFACTION

Transit agencies participating in this study reported positive reactions from bicyclists regarding the accommodation of bicycles on transit. Both light and heavy rail transit providers reported some negative reactions from transit station staff unfamiliar with the rules regarding bicyclists on their transit system. Commuter rail providers did not report any negative reactions from staff, but did note that reactions from staff had been neutral rather than positive. Generally, transit agencies also reported neutral reactions from nonbicycling transit customers. Regulations that prohibit bicyclists during peak

TABLE 8
BICYCLE-ON-HEAVY-RAIL SERVICES

Type of Service	Transit Agencies (Location)
Bicycles allowed on board trains only during off-peak hours and can only use designated areas in each train car	Massachusetts Bay Transportation Authority (Boston, MA) Southeastern Pennsylvania Transportation Authority (Philadelphia, PA) Washington Metropolitan Area Transit Authority (Washington, DC)
Bicycles allowed on board trains at any time they will fit	New York City Transit (New York City, NY) Maryland Transit Administration (Baltimore, MD)*
Bicycles allowed on board trains only during off-peak hours; can use any part of the train	Chicago Transit Authority (Chicago, IL)
Bicyclists allowed to bring bike on board during off-peak hours and on reverse commute direction trains during peak hours	Bay Area Rapid Transit (San Francisco, CA) Los Angeles Metropolitan Transportation Authority (Los Angeles, CA)

*Bicycles are allowed on board only in designated areas.

TABLE 9
BICYCLE-ON-COMMUTER-RAIL SERVICES

Type of Service	Transit Agencies (Location)
Bicyclists allowed to bring bike on board in designated areas	New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ) Southeastern Pennsylvania Transportation Authority (Philadelphia, PA)*
Up to four bicycles can be tied down in each rail car	Orange County Transportation Authority (Orange, CA)
Bicycles stored on racks or hooks in each rail car	Amtrak Capitol Corridor (Sacramento and Bay Area, CA) Caltrain** New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ) San Joaquin Regional Rail Commission (Stockton, CA)**
Only enclosed folding bicycles are allowed on trains	Maryland Transit Administration (Baltimore, MD) (MARC Train Service)

*Bicyclists are not allowed to bring bicycles on board during peak hours.
**Designated cars with bicycle racks are provided.

FIGURE 16 Altamount Commuter Express designates one rail car per train for carrying up to 17 bicycles.

FIGURE 17 Altamont Commuter Express allows space for an additional two to four bicycles as overflow on remaining rail cars.

FIGURE 18 New Jersey Transit Corp. provides hooks for hanging bicycles on its River LINE light rail service.

FIGURE 19 European-influenced design incorporates a three-hook panel above flip-up seats at each end of articulated rail cars—New Jersey Transit Corp.

hours can also have an impact on the satisfaction of bicyclists. Although bicyclists provide positive feedback in response to bringing their bicycles aboard, they are often frustrated by regulations prohibiting their use of rail transit during peak hours.

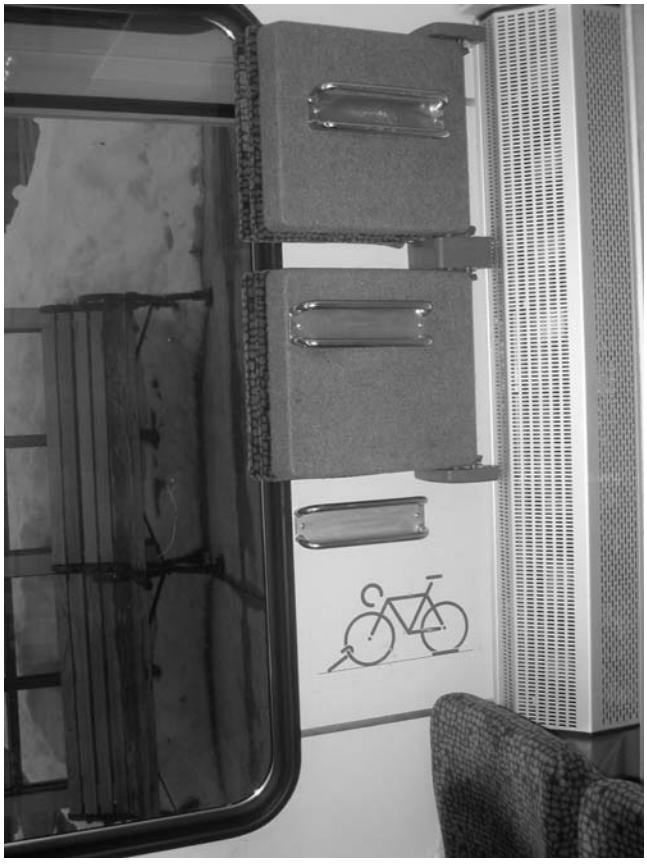


FIGURE 20 When not used for bikes, space can be used for baggage or seated passengers—New Jersey Transit Corp.

Bicycles on Light Rail

TriMet, Portland MAX Light Rail and Streetcar—Portland, Oregon

TriMet, which welcomes bicycles to the Portland light rail transit system (MAX) and the Portland Streetcar, has allowed bicycles on board since 1991 (MAX opened in September 1986). However, its level of accommodation has evolved considerably over time. Today, TriMet views bicycling as a way to extend the reach of the transit system, because bikes can access areas that fixed-route transit does not presently serve. Previous restrictions on time of day and age have been lifted and permits were eliminated. These were both changed as a result of increasing comfort and experience with bicycles on MAX and improved bike racks for buses (see Figure 21).

Recent innovations have included retrofitting light rail cars with bicycle hooks and permitting bikes in priority seating areas when not in use; helping to accommodate group outings to popular cycling destinations (see Figure 22). Parking for 72 bikes in on-demand bike lockers was included as part of the Interstate MAX extension to North Portland (May 2004), bringing the total number of lockers to 340. Bike racks are also provided on all buses.

The biggest challenge is the crowds, as Portland's train cars are full in all directions during substantial portions of the day. As the rail system matures, TriMet is interested in pursuing additional bike parking at outlying transit centers to help alleviate demand for on-board bike racks. Added train frequency (currently about every 4 min in the central business district during peak periods) has also helped to add capacity (see Figure 23).

COSTS

In several cases, rail transit providers reported little to no significant cost associated with accommodating bicycles in their rail cars. In the case of ACE's dedicated rail car, there was no net loss of seats to bicycles because the dedicated rail car simply accommodated bicycle storage previously located in other cars. CTA reported only the nominal cost of printing stickers for their heavy rail cars stating "two bicycles per car." Other agencies have been able to accommodate bicycles at a low cost by adapting existing equipment such as secure wheelchair racks for bicycle use.

The amount of staff time dedicated to providing the bicycle-on-rail service ranged from 1.5 full-time equivalents in Denver to 40 h per year of staff time in San Diego. Because bike-on-rail passengers do not require delayed stops, like those necessary to allow bus riders time to attach or detach a bicycle to or from the exterior rack, there is little or no extra transit operation time devoted to allowing bicycles to get on and off of the rail cars.

Bicycles on Heavy Rail

Chicago Transit Authority—Chicago, Illinois

With a broad base of support from the mayor's office, the DOT and various advocacy organizations, the CTA began accommodating bicycles on its heavy rail cars in 1999. Each CTA rail car provides room for two bicycles (trains are generally four to eight cars long). As the program gained in popularity, CTA responded by increasing the

FIGURE 21 Improved bike racks on Portland MAX light rail. TriMet has eliminated restrictions on when bicyclists can use the system and eliminated permits. (*Source*: Alta Planning and Design.)

number of hours that bicycles are allowed on trains. Initially only a weekend program, bicycles are now allowed on trains for all but 4 h on weekdays. Bicycles may be stored in the disabled accessible spaces in each car, when not occupied by a customer with disabilities. Cyclists may also stand with their bikes near the doors or at either end of the rail car. This flexibility allows cyclists to use whatever space is most appropriate during their trip (see Figure 24).

CTA stresses the importance of common sense and courtesy toward other customers when traveling with a bicycle. The bicycle-on-heavy-rail program serves a wide range of riders as they travel to various locations, and works in conjunction with its Bikes on Bus program and indoor bicycle parking at rail stations. In pursuit of a fully functioning multimodal service, CTA is currently retrofitting stations in a way that will make them more accessible to cyclists. CTA is also in the process of testing special stairway ramps that may be installed to aid cyclists in transporting their bicycles through transit stations.

SAFETY AND SECURITY

The transit providers participating in this study reported no serious safety or security issues with allowing bicycles on board rail transit, but spoke frequently to the issue of minor property damage caused by bicycles. Rail transit providers have suffered minor damage, such as scratching, to their rail cars as a result of bicycle accommodation. Also, bicyclists have reported minor damage to their bicycles during use of bicycle-on-rail services.

FIGURE 22 Bikes are permitted in priority seating areas when not in use to accommodate group outings. (*Source*: Alta Planning and Design.)

Safety and security concerns may decrease as rail transit operators gain experience in the processes of storing and transporting bicycles. Additionally, cyclists and regular transit riders will benefit from increased knowledge of bicycle safety and security, which may result from adequate training, as discussed here.

RESTRICTIONS AND RULES

Restrictions on bicycle-on-rail service are often established to address the difficulty of maneuvering bicycles though crowded and confined environments, such as transit stations and rail cars. Although several rail transit providers, including New York City Transit, NJ TRANSIT, and the San Diego Metropolitan Transit System, simply state that bicycles are

FIGURE 23 Increased frequency of Portland MAX light rail operations in the central business district has helped add to bike capacity. (*Source*: Alta Planning and Design.)

prohibited during "peak times," some providers, including RTD and British Columbia's TransLink, designate time windows when cyclists cannot board with their bicycles. Bay Area Rapid Transit (BART) District and Los Angeles Metropolitan Transportation Authority have commute period bicycle restrictions, but only in the peak direction of travel. Prohibiting bicycles during these time periods allows more commuters to ride trains with standing room only.

Because of the finite amount of space in each rail car, some transit providers also limit the number of bicycles allowed in a rail car at one time. For example, only two bicyclists are allowed aboard each Washington Metropolitan Area Transit Authority rail car on weekdays, whereas four bicyclists are allowed on board on weekends. Rail transit providers may also designate specific rail cars for bicycle use. For example, the BART system allows bicycles on all but the first car of the train.

The number of bicyclists using rail transit may be restricted by age requirements or through a permitting process (although

FIGURE 24 Chicago Transit Authority allows bicyclists to stand with their bikes near doors at either end of a rail car.

permits have become much less common than they were 10 years ago). Age restrictions for bringing bicycles on transit are based on the strength and level of maturity needed to maneuver and manage a bicycle on a rail car. Some rail transit providers allow children to bring their bicycles on board when accompanied by an adult, as in the case of BART and the Washington Metropolitan Area Transit Authority, or when they have gone through the permitting process and their parent or guardian has signed a release of liability.

In addition, most light and heavy rail providers restrict the type of bicycle allowed, commonly prohibiting tandem and recumbent bicycles, tricycles, or bicycles with wheels less than 41 cm (16 in.) in diameter.

TRAINING AND EDUCATION PROGRAMS

Additional training for transit operators and bicyclists can help transit providers accommodate bicycles more smoothly. The needs of bicyclists differ significantly from regular transit patrons, and some transit providers prepare their operators through supplemental training programs. Conductors at the Southeastern Pennsylvania Transportation Authority are given specific information regarding the number of bicyclists allowed on each train at a given time. TransLink reported that education has alleviated some of the original resistance to bicycle service implementation. Some rail transit providers specifically train their security personnel to be able to address bicycle issues and assist bicyclists with navigating through the system. Many of the rail providers surveyed also provide their bicycling customers with brochures and website information outlining the rules and regulations regarding bicycles on transit.

CHAPTER FIVE

INTEGRATION OF BICYCLES WITH OTHER PUBLIC TRANSIT SERVICES

Although bicycles are most commonly accommodated on buses and trains, transit agencies have also found ways to integrate bicycles with other public transit services, including ferries, vanpools, on-demand transit, and mountain transit systems.

BICYCLES ON FERRIES

The opportunity to bring bicycles on board ferries allows ferry passengers with bikes to reach destinations that are too far from ferry terminals to reach by walking. In Washington State and British Columbia, ferry service has long been an essential form of transportation owing to the physical geography of the region.

Bicycles on Ferry Transit

Washington State Ferries—Seattle, Washington

Washington State Ferries registers more than 200,000 bicycle roundtrips per year. There is a surcharge for bringing a bicycle on most ferry routes (between $0.50 and $6.00, depending on the route distance and time of day). However, the surcharge is waived if a bicyclist has purchased a permit for $20. Permits can be obtained by registering a bicycle on-line or by mail. Each ferry stores bicycles and motor vehicles in close quarters, which has been a challenge for the ferry system (see Figure 25). Minor scratching of both bicycles and cars led to a change in loading policy. The revised policy allows bicyclists to board and disembark the ferry ahead of cars.

BICYCLES ON VANPOOLS

Accommodating bicycles on vanpool vehicles is another way for transit agencies to provide bicycle services to their customers. Vans can often use generic car bike racks, which do not require customization. A vanpool, which is often used for commuter purposes, can efficiently extend the reach of its service by carrying bicycles. Commuters can ride to the vanpool meeting places and then from the vanpool destination to their specific place of employment.

Bicycles on Vanpool Vehicles

Regional Transportation District/Denver Regional Council of Governments—Denver, Colorado

The RTD (transit agency) and the Denver Regional Council of Governments (metropolitan planning organization) initiated a bicycle-on-vanpool program in 2002. Vanpool services are provided primarily for groups of commuters traveling together to a similar location, in most cases a single workplace. Vanpool riders must travel at least 24 km (15 mi) to work, are required to have a group of at least four to join the program, and must have a group of six within 3 months to sustain the vanpool. Riders are expected to meet in a single location for pickup. The RTD and Council of Governments provide the van, fuel, and maintenance. Vanpool patrons pay a monthly fee ranging from $35 to $105. There is no additional fee for transporting bicycles.

Vans feature racks that can accommodate two bicycles at a time. The vans are easily outfitted with racks because they are standard passenger vans that can use generic automobile bicycle racks (see Figure 26). Vanpool destinations often accommodate bicycle commuters with long-term bicycle parking, such as the lockers shown in the background of the figure.

BICYCLES ON MOUNTAIN TRANSIT SYSTEMS

Mountain transit systems typically serve a greater number of recreational users than do urban or suburban transit systems. In regions where recreational trails abound, transit riders may use transit to travel between different trail segments or to access trail heads that are some distance from their home (or local accommodation). Some mountain transit systems provide bus–bicycle racks for people participating in mountain biking at ski resorts during the summer season. Not only can riders take their bicycles on mountain transit vehicles, but riders may also bring their bicycles aboard gondolas and chairlifts.

FIGURE 25 Bicycle on ferry—Washington State Ferries. (*Source:* Rita Robinson, Department of Community, Trade and Economic Development.)

FIGURE 26 Bicycle rack on vanpool vehicle—Regional Transportation District (Denver).

Mountain Transit System Bicycle Services

Town of Breckenridge Free Ride—Breckenridge, Colorado

The town of Breckenridge allows bicycles on buses that run to and from local ski resorts (see Figure 27). This augments transit services for people commuting around Breckenridge and also provides transportation access to recreational destinations. Breckenridge Free Ride is especially convenient for recreational cyclists looking to ride downhill during the ski resorts' summer season. Local resorts accommodate bicycles on chairlifts during the summer for downhill riding.

BICYCLES ON ON-DEMAND TRANSIT

In communities where the demand for transit service is low owing to population density or other factors, on-demand transit may be a more cost-effective method of operation for the transit provider. On-demand transit services may employ smaller transit vehicles than fixed-route or fixed-schedule transit. Although the transit vehicles are typically smaller, bicycles can still be accommodated with front-mounted bicycle racks.

FIGURE 27 Bicycles are allowed on buses that run to and from local ski resorts—Breckenridge (Colorado) Free Ride.

FIGURE 28 BC Transit (Victoria) on-demand transit provides bike racks on community buses that can be used during daylight hours.

On-Demand Transit Bicycle Services

BC Transit—Victoria, British Columbia, Canada

In rural areas surrounding Victoria, British Columbia, on-demand transit service provides transportation to residents who do not live within comfortable walking distance of regular transit stops. Using modified vans called community buses, BC Transit allows deviations from fixed-route and fixed-schedule service to be requested in areas of low population density. The community buses used by BC Transit are outfitted with the same racks that are mounted on the front of BC Transit's 200 conventional transit buses (see Figure 28). However, front-mounted bicycles on the community buses block the headlights, which limits the time that bicyclists may use the service to daylight hours.

BC Transit currently operates four community buses in the Greater Victoria metropolitan area. On-demand service is offered in the suburbs of Colwood, Langford, and Metchosin (these communities have populations of between 5,000 and 20,000). Accommodating bicyclists with on-demand transit provides rural customers with an amenity that might otherwise only be offered in a more urban setting.

CHAPTER SIX

INTEGRATION OF BICYCLE PARKING AND TRANSIT

Not all transit users have a need to take their bike on transit; many would like to leave it at the transit station or stop. Bicycle parking provides a critical link in the multimodal transportation system. Bicycle racks and lockers allow bicyclists to store their bicycles at bus stops, train stations, park-and-ride lots, or other types of transit hubs so that they can continue their trip on public transportation. As with transit riders who access stations in automobiles, parking is an essential component to making bicycling to transit feasible.

Bicycle parking is provided by many transit agencies in the United States and Canada (for examples see Table 10). Bicycle lockers and indoor bicycle parking (both lockers and racks) have been installed at major transit hubs, such as train stations, park-and-ride lots, and bus terminals (see Figures 29 and 30). Bicycle racks require less space and provide shorter-term parking; therefore, they can be provided at a greater number of locations throughout a transit system, such as local bus stops. Several transit agencies that provided information for this study attempt to make more bike parking available at those stops and stations with greater demand.

Several communities, including Long Beach, San Francisco, Palo Alto, and Berkeley, California; Denver, Colorado; and Seattle, Washington, have recently installed staffed bicycle parking facilities (also referred to as bike stations). Most of these bike stations are located at or within one to two blocks of transit hubs. These staffed facilities commonly offer services such as repairs and rentals. Some have restroom and changing facilities that are especially useful for commuter bicyclists before and after work. Others offer transit-related services, such as car sharing.

TECHNICAL SPECIFICATIONS AND DESIGN

Bicycle racks are the most common type of bike parking facilities. Inverted U-shaped racks are often used at transit stops and stations. Many agencies offer these racks for people who want to access their bicycle easily after a few hours. The agencies (or local jurisdictions) often install the racks in locations that are visible from the street and convenient for bicyclists to reach (e.g., those that do not require going up or down steps or over barriers). Transit agencies tend to provide lockers at transit stations where people often leave their bicycles throughout the day or overnight so that they can have greater security from damage and theft.

Many different types of bike lockers have been used at transit stations. Lockers can be constructed in rectangular cubes, wedges, and other shapes. Some can be opened through a door at one end; whereas others can be opened like the lid of a container. Materials used for bike lockers include metal, perforated metal, fiberboard, and fiberglass. The lockers can be secured by user-provided locks, swipe cards, electronic locks, or locks with master keys that are issued by transit agencies.

Transit agencies try to avoid installing bicycle parking in locations that will restrict the flow of transit passengers. At larger transit stops, many agencies attempt to place bike parking in view of the station manager. Only one of the agencies reported that they provided bike parking within a fare gate perimeter at transit stations; it is more common to provide parking facilities outside of stations.

Some of the transit agencies interviewed for the survey tried to place their bike parking facilities in open locations with good lighting that were covered by a roof or canopy. One transit agency also mentioned that bike racks and lockers should not restrict maintenance activities, such as snow removal and mowing. Space constraints may prevent installing bike parking in certain places; however, some agencies believe that it was still important to provide bicycle parking, even when it was not in an optimal location. Signage is used by some agencies to direct bicyclists to parking facilities.

A good resource for information about designing and locating bike parking facilities is the Association of Pedestrian and Bicycle Professionals *Bike Parking Guidelines* (*25*).

USAGE PATTERNS AND USER DEMOGRAPHICS

Most transit agencies are aware of the number of bicycle parking spaces that are available throughout their systems, but only a small portion of these agencies collect data about how many bicyclists are using bike rack and locker facilities. Of those that do, COTA conducts daily counts and RTD (Denver) collects weekly data.

One of the most extensive bicycle parking studies was a survey of bicyclists using racks and lockers near transit stations in Miami–Dade County, Florida. It found that nearly half of the bicyclists were 40 to 59 years old and almost 85% were male. The bicyclists also tended to have either low

TABLE 10
BICYCLE PARKING FACILITIES

Type of Service	Transit Agencies (Location)
Bicycle lockers at train stations and/or bus terminals	King County Metro Transit (Seattle, WA) Long Beach Transit (Long Beach, CA) Long Island Railroad (Long Island Region, NY) Los Angeles Metropolitan Transportation Authority (Los Angeles, CA) New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ) Pace Suburban Bus Service (Arlington Heights, IL) Regional Transportation District (RTD) (Denver, CO) Southeastern Pennsylvania Transportation Authority (Philadelphia, PA) TransLink (Greater Vancouver, British Columbia) TriMet (Portland, OR) Washington Area Metropolitan Transit Authority (Washington, DC) Washington State Ferries (Seattle, WA)
Bicycle racks at train stations and/or bus terminals	Chicago Transit Authority (Chicago, IL) City of Visalia–Visalia City Coach (Visalia, CA) Hillsborough Area Regional Transit (HARTline) (Tampa, FL) King County Metro Transit (Seattle, WA) Los Angeles Metropolitan Transportation Authority (Los Angeles, CA) New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ) Regional Transportation District (RTD) (Denver, CO) Southeastern Pennsylvania Transportation Authority (Philadelphia, PA) Toronto Transit Commission (Toronto, Ontario) TransLink (Greater Vancouver, British Columbia) TriMet (Portland, OR) Washington Area Metropolitan Transit Authority (Washington, DC)
Indoor (sheltered) bicycle parking at train stations and/or bus terminals	Chicago Transit Authority (Chicago, IL)
Bicycle lockers at park-and-ride facilities	Central Ohio Transit Authority (Columbus, OH) New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ)
Bicycle racks at bus stops	AMTRAN (Altoona, PA) Chicago Transit Authority (Chicago, IL) Pace Suburban Bus Service (Arlington Heights, IL) Regional Transportation District (RTD) (Denver, CO) Ride Glenwood Springs (Glenwood Springs, CO) TransLink (Greater Vancouver, British Columbia)
Staffed bicycle parking (bike stations) with other services	Bay Area Rapid Transit (Fruitvale Station, Berkeley Station, Embarcadero Station) Caltrain (San Francisco, CA; Palo Alto, CA) King County Metro Transit (Seattle, WA) Long Beach Transit (Long Beach, CA) Regional Transportation District (Cherry Creek Bike Rack, Denver)

FIGURE 29 Transit hub bicycle rack. (*Source:* Chicago Transit Authority.)

FIGURE 30 Transit hub bicycle locker. (*Source:* Regional Transit District–Denver.)

incomes (35% earning less than $20,000 per year) or high incomes (21% earning $70,000 or more per year). Lower-income bicyclists often reported bicycling to transit because they did not have a car or needed to save money; higher-income bicyclists often bicycled for environmental and physical fitness reasons (*13*).

King County Metro Transit (Seattle, Washington) also reported surveying bicycle locker users about their trip characteristics and locker usage patterns. King County Metro Transit's survey found that all types of people used their bicycle lockers. In one part of the region, many people who used them worked at professional jobs in the technology sector.

Several agencies that have collected data about bicycle parking have noted trends over time. COTA found that the use of bike parking has remained constant since 1995. TriMet has documented a steady 87% occupancy rate for bicycle lockers since 2002. King County Metro found that the percentage of lockers that were being rented increased from approximately 25% in 2001 to 82% in late 2004. CTA found that indoor bike parking at transit stations increased by 44% between 2001 and 2002.

Many agencies experience times when the demand for bicycle parking exceeds the number of spaces available. Some indoor bike parking facilities at CTA stations are filled to capacity on a daily basis. Seven King County Metro Transit stations have waiting lists for bike lockers. Seventeen of the 26 TriMet light rail station locations with reserved bike lockers are at capacity and have waiting lists.

REACTIONS TO SERVICE FROM DIFFERENT GROUPS

Transit agencies report that bicyclists are very positive about bicycle parking at transit stops and stations. Reactions from transit operators, transit agency staff, regular transit riders, and the general public tend to be either neutral or positive. Only one agency expressed disappointment that their bicycle racks were being underutilized.

COSTS

Typical inverted U-shaped bike racks cost approximately $150 to $200 per rack (each rack has space for two bikes). Bike lockers can cost between $500 and $2,500 apiece, depending on the model and quantity purchased. By comparison, the cost to construct automobile parking can range from $3,500 to $12,000 per space for surface parking (*26–28*) and between $10,000 and $31,000 per space for structured parking (*26–31*). The annual cost of operating and maintaining automobile parking can range from $100 to $700 per space (*26,27,29*). These costs depend on factors such as real estate prices, the total square footage, number of spaces for the parking lots and garages, and the number of levels above and below ground.

The bike racks and lockers can be purchased and maintained by the transit agency, by local transportation departments, local bicycle organizations, or some combination of these groups. For example, CTA provides bicycle parking facilities along with major transit station reconstruction projects, but the city of Chicago DOT installs all other bicycle parking facilities inside and outside of stations. Local transportation management associations, local parking authorities, and other groups rent bicycle lockers at NJ TRANSIT facilities. Both King County Metro Transit and TriMet contract with local bicycle organizations to manage their bicycle locker programs.

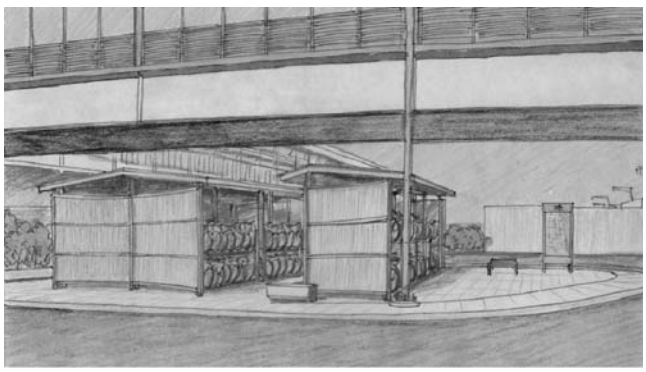
Assistance from other organizations has made it possible for some transit agencies to spend relatively little staff time in managing their bicycle parking services. Even the larger agencies reported devoting less than one-quarter of a staff member's time to managing bicycle parking.

High-Capacity Bicycle Parking Facilities

Chicago Transit Authority—Chicago, Illinois

High-capacity parking facilities were scheduled for construction at four CTA heavy rail stations in 2005 (see Figures 31 and 32). The Chicago DOT is using $675,000 of CMAQ Improvement Program funds to design and construct the facilities. Each storage rack will be fit into the limited existing space at the transit station, providing secure, weather-protected bicycle parking. A kiosk with bicycling information will also be provided near each parking area.

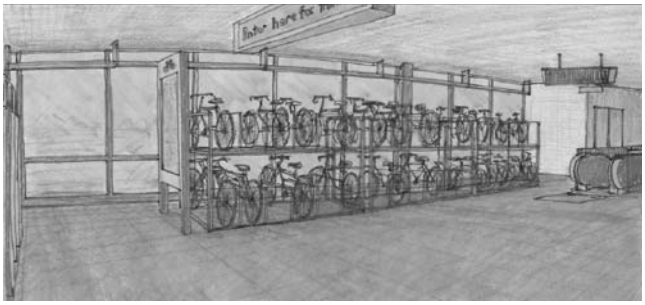
(a)



(b)

FIGURE 31 Before (*a*) and after (*b*) views of proposed high-capacity bicycle facility at Midway Station in Chicago.

(a)



(b)

FIGURE 32 Before (*a*) and after (*b*) views of proposed high-capacity bicycle parking facility at Sox/35th Street Station in Chicago.

Although this type of bicycle parking differs from staffed bicycle parking, it will help meet high levels of demand for bicycle storage with minimal operating costs. The high-capacity bicycle parking facilities are designed to take advantage of vertical space—bikes are parked on two separate levels, one on top of the other. Each bicycle parking facility will accommodate between 40 and 120 bicycles.

CTA conducted a study to identify transit stations with the potential to serve the most bicyclists and used the results to determine the first locations for high-capacity bicycle parking. This study considered such factors as existing demand for bicycle parking, rail ridership levels, pedestrian and bicycle infrastructure, bus service, and potential land use development in the area surrounding the station. Although the high-capacity facilities help to meet an increasing demand for bike-to-transit services, they are also highly visible facilities that help advertise the rail system to potential bicycle customers.

The high-capacity bicycle parking facilities are part of a broader effort by CTA to incorporate bike parking into all new construction projects. CTA currently has indoor bicycle parking at 56 stations.

SAFETY AND SECURITY

Several agencies cited concerns about bicycle lockers being used as receptacles for trash, a potential place to hide explosives, or as a shelter for people who are homeless. Most current bicycle locker designs do not allow people to see inside. To address this concern, TriMet retrofitted its bike lockers so that security personnel could see into them (this was done with care to maintain the structural integrity of the lockers). All new lockers must have perforated panels that allow people to see the contents of the locker. To meet the requirements of a federal DHS directive, RTD has established a policy requiring first-come, first-served bicycle lockers to be 76 m (250 ft) from light rail platforms and other passenger loading areas, where possible, or converted to the lease program if inside 76 m (250 ft).

Agencies also reported that they design bike parking so that it does not interfere with station circulation and is compliant with Americans with Disability Act regulations. Visalia City Coach requires all bicycles to be parked in bike racks, not next to pillars, posts, or benches. This helps reduce clutter in transit access areas. Bicycles that are parked in bicycle racks for more than 24 h are impounded by the police department.

In general, there are few regulations related to bike parking, with the exception of bicycle locker permits. Most agencies require fees to obtain permits for using bicycle lockers, although some are experimenting with first-come, first-served lockers (see RTD case study in this chapter). Examples of agencies charging fees are shown in Table 11.

To obtain permits, agencies require bicyclists to do one of the following:

- Visit a customer service center or sales outlet,
- Contact the local bicycle organization,
- Mail in an application, or
- See a station attendant.

Bicycle theft was reported to be only a minor problem by several agencies. More agencies cited problems with theft and damage to bicycles parked at bicycle racks than for those stored in bicycle lockers. Damage to the actual bicycle rack and locker facilities was also viewed as only a minor problem by most of the agencies. Most agencies have "park at your own risk" policies.

Bicycle Locker Program

Regional Transportation District—Denver, Colorado

RTD has a total of 550 lockers located at light rail stations, park-and-rides, and transit hubs throughout the Denver region (see Figure 33). In general, the bicycle locker program has been successful at providing long-term, secure parking for bicyclists.

TABLE 11
EXAMPLES OF BICYCLE LOCKER FEES

Transit Agency (Location)	Description of Fee
King County Metro Transit (Seattle, WA)	$25 refundable deposit
Regional Transportation District (RTD) (Denver, CO)	$20 one-time charge
Southeastern Pennsylvania Transportation Authority (Philadelphia, PA)	$25 refundable deposit
TransLink (Greater Vancouver, British Columbia)	$10 per month
TriMet (Portland, OR)	$50 refundable deposit

Initially, RTD purchased 200 lockers for a bike parking demonstration project at a cost of $500 to $600 per locker. These lockers required assembly and had several maintenance and security shortcomings. The outsides of the lockers were made of plastic laminate, which tended to deteriorate over time. The lockers also had shared walls, which consisted of foam core or fiber board. These materials were easy to damage and could be broken to vandalize bicycles stored in adjacent lockers. RTD now uses higher-quality bicycle lockers that cost approximately $1,000 each. They come as one piece (no assembly required) with no external or internal frame, no seams or joints on tops or side walls, and are made of nonflammable, durable plastic composite material. As such, there are no shared walls between units.

RTD offers two types of locker use agreements: lease lockers and first-come, first-served lockers. For both types of use, bicyclists are required to fill out a form with basic personal information and purchase an RTD padlock ($20) (see Figure 34). Leased lockers are more difficult to vandalize and use inappropriately because each locker is assigned to a single individual. However, these lockers are not used at all times by their lease holders, so the capacity is not used as efficiently as possible. First-come, first-served lockers allow anyone to use a locker if they obtain an RTD lock. However, RTD has had problems with vandalism and illegal storage of personal possessions and trash in first-come, first-served lockers, because they are left open (unsecured) when not in use.

Security concerns since the March 2004 Madrid train bombings have also affected RTD's bicycle locker program. Public receptacles are not allowed within 250 ft of train platforms; therefore, first-come, first-served lockers must be clear of this area. Alternative locker designs have been considered to overcome security concerns about lockers located close to train platforms, such as those made of perforated metal and those with security windows. However, these designs allow potential thieves to see the bicycles that are being stored. As a result, bicyclists with more expensive bicycles do not like to use this type of locker.

RTD is considering electronic locks to address several first-come, first-served issues. An electronic lock system would allow bicyclists to access any locker that is available on a first-come, first-served basis, while keeping the locker unit secure even when not in use. In addition, the electronic lock system could make it possible for RTD to track the frequency and length of use of lockers. This would help the agency determine where more lockers were needed. Information from the electronic lock system could also help the agency identify people who leave a bicycle in the locker for longer than the maximum-allowed length of time and could help reveal locker-use behavior that could indicate a security threat. Various types of access "keys" are available: physical (metal) keys with an electronic I.D., swipe cards or proximity cards (like a credit card), and key pads.

FIGURE 33 Bicycle locker located at light rail stations, park-and-rides, and transit hubs throughout the Denver region.

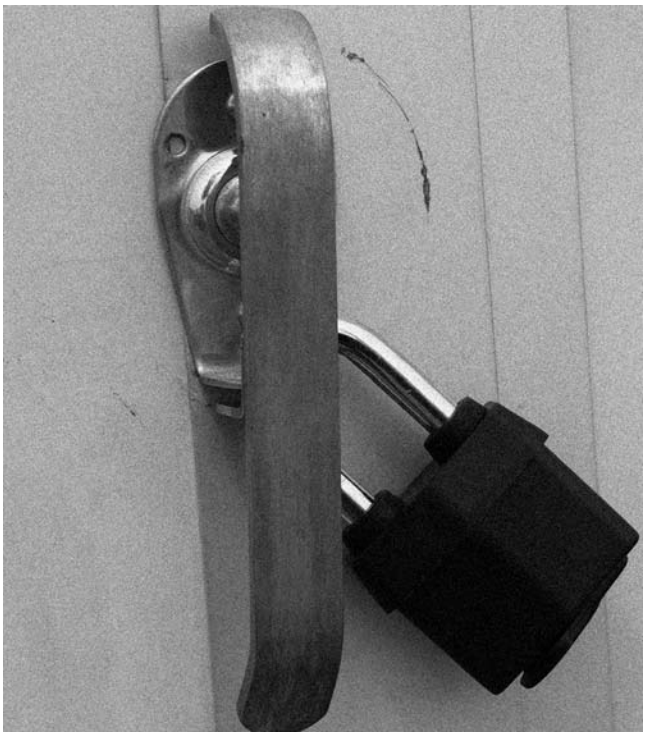


FIGURE 34 Regional Transportation District padlock.

MAINTENANCE

King County Metro Transit makes sure the locks on bicycle lockers are working at least once per year. They also ask renters to report immediately any lock problems to the Bicycle Alliance, which manages the bicycle locker program. If a problem occurs, the agency has an annual contract with a lock company for lock replacement and repair, and the transit agency's maintenance crew is also available to assist if needed.

Most agencies reported minimal maintenance costs for bike parking facilities. However, if an agency has problems with racks or lockers becoming damaged, this can result in higher maintenance costs. One agency recommended that high-quality racks and lockers be purchased up-front to help reduce the cost of maintenance in the long run. One agency that was responsible for maintaining bicycle lockers was frustrated with cleaning the insides of the lockers, removing graffiti, and keeping the lockers in general working condition.

STAFFED BICYCLE PARKING (BIKE STATIONS)

Staffed bicycle parking facilities provide another innovative method of integrating bicycles with transit, and in supporting bicycle transportation in general. The concept for staffed bicycle parking originated in Europe and Japan, and is a comprehensive approach to providing everything the bicyclist needs in one location. A typical staffed bicycle parking facility can include secure indoor bike parking, a repair shop, bike sales and rentals, car sharing services, changing rooms, route

and transit information, and a variety of other support services. The first staffed bicycle parking facility in the United States was opened in Long Beach, California. A number of other communities throughout North America have either already developed or are in the process of planning for new staffed bicycle parking facilities.

Individual staffed bicycle parking facilities are typically developed by franchises (either nonprofit or for-profit), and are membership-based. Construction costs can vary widely (reported costs were between $75,000 and $3.1 million), depending on the site characteristics, size of the facility, and the bicycle services that are offered. Sustaining a bike station typically requires subsidies ranging from $50,000 to $100,000 per year.

Staffed bicycle parking is most likely to be successful when it is located on the same site or adjacent to transit. This close proximity reduces the amount of walking time customers need to make the transition between bicycling and transit.

Staffed Bicycle Parking

Bikestation Long Beach—Long Beach, California

Located on a transit mall, Bikestation Long Beach links more than 30 mi of bicycle paths to light rail, buses, and shuttles. Bikestation Long Beach is a staffed facility offering secure bicycle parking, repairs, rentals, changing and restrooms, and other transit services, such as car share. Bikestation Long Beach offers secure parking to members 24 h a day, 7 days a week. Bikestation Long Beach is operated by a nonprofit organization that provides information and support to each facility location. Bikestation Long Beach was the first staffed bicycle parking facility in the United States. A new Bikestation Long Beach is being constructed across from the current station and will cost approximately $400,000 (see Figure 35). The costs of other staffed bicycle parking facilities vary depending on total size, location, and number of amenities.

DEVELOPMENTS IN BICYCLE PARKING SERVICES

Transit agencies continue to improve bicycle parking services. Most existing bicycle locker programs require bicyclists to rent or lease specific lockers. RTD, the Central Florida Regional Transportation Authority, and TriMet are experimenting with first-come, first-served bicycle locker programs at light rail stations. This new type of program allows lockers to remain unlocked until someone uses one, and is designed to serve bicyclists with a greater need for short-term parking (less than 24 h) than long-term parking, such as commuters. This type of arrangement may result in greater use of the bike locker facilities.

FIGURE 35 New bike station under construction for Bikestation Long Beach.

Agencies are making bike parking services more convenient in several other ways. These improvements include:

- Moving bike racks and lockers to locations that are more visible to potential users;
- Moving bike racks to locations that are more convenient to other services, such as customer service windows;
- Improving signage to let transit passengers know the process for renting bicycle lockers; and
- Advertising bicycle parking services in local bicycle publications.

The Puget Sound Regional Council undertook a Regional Bike Stations Project to help transit agencies make better-informed decisions about how to accommodate bicycles at transit stations and park-and-ride lots. It included a methodology to estimate bicycle demand for specific transit locations, examined the feasibility of developing bike stations at four specific locations, provided design guidelines for accommodating different amounts of bike parking, and developed a marketing plan to promote the use of bike-and-ride services throughout the region (*32*).

CHAPTER SEVEN

CONCLUSIONS

There has been significant growth in the number of agencies offering bicycle services since the publication of *TCRP Synthesis of Transit Practice 4* in 1994. In addition, the types of bicycle and transit integration have continued to diversify as transit agencies have pioneered new bicycle services.

Fifty-six transit agencies from all parts of North America provided information about bicycle and transit services for this report. These agencies cited the many benefits of offering bicycle-related services. Bicycle services are thought to help to attract more transit riders by extending the catchment area of their transit system and provide greater mobility to customers at the beginning and end of their transit trips. Accommodating bicycles on transit may also allow bicyclists to avoid locations where it is unsafe or uncomfortable to ride. Several agencies believed that their bicycle services help decrease automobile traffic congestion, reduce air pollution (by shifting automobile drivers to transit), and improve the public image of transit.

Transit agencies that provided information for this study reported very positive reactions from bicyclists and generally favorable reactions from other transit riders, transit agency staff, and the general public. Some agencies experienced initial resistance to establishing bicycle services, particularly from transit operators. However, the agencies reported that this resistance usually diminished as the services were offered over time. Agencies have also used training, demonstrations, and actual experience to overcome this resistance.

Agencies have generally experienced few maintenance problems with their bicycle services. Problems that were reported by transit agencies included obtaining replacement parts for broken bus bike racks, abandoned bicycles on bus racks and at transit stations, vandalized bicycle lockers, bus washers being damaged by the bus bicycle racks, bus bicycle racks interfering with windshield wipers, and the need to remove the bus bicycle rack when a bus is towed.

Compared with the costs of buses, rail cars, and automobile parking facilities, it is inexpensive for transit agencies to purchase bicycle equipment, such as bike racks on buses, bike hooks in rail cars, and bike racks and lockers at transit stations. In addition, most bicycle and transit services do not impose extra costs on individual bicyclists (other than regular fares). Some agencies charge fees for permits or rental leases for secure bicycle locker facilities; however, many agencies have eliminated fees and permitting requirements for using other bicycle services.

Bicycle and transit integration is viewed by many agencies as a good tool for marketing and promoting good community relations. Many of the transit agencies participating in the survey provided information about their bicycle services on their websites and through brochures.

Several transit agencies reported that they had developed positive relationships with bicycle advocacy groups. These advocacy groups helped raise awareness about bicycle and transit integration programs through e-mail lists, websites, and other activities. A few agencies have developed formal partnerships with bicycle advocacy groups for managing bicycle parking programs.

Several transit agencies have participated in planning efforts with local jurisdictions to ensure that transportation facility construction and land use development facilitate bicycle access to transit. Partnerships between transit agencies and local jurisdictions have led to the installation of bicycle lanes, bike routes, shared-use paths, bicycle parking, wayfinding signs, etc., to make it easier for people to bicycle to transit.

Although some transit agencies currently record the number of people using bicycle services, few agencies collect data about bicyclists' trip characteristics or bicycle parking use. In addition, few agencies have established performance measures for their bicycle services.

Of the agencies that collected consistent data on the use of bicycle services, most found increases in use over time. Several agencies reported significant growth in use during the first few years of a new service as information about the service spread to potential customers. Others found that removing fees and permit requirements or increasing the percentage of buses with racks also increased usage levels.

Bicycle and transit integration is likely to continue to expand as more agencies begin to offer the services described in this synthesis. Information from transit agencies and the TCRP topic panel showed that there are several other areas of potential growth in bicycle and transit integration:

- Emerging ways of accommodating bicycles on transit, such as high-capacity bus bicycle racks, bicycle-on-

vanpool services, and new methods for storing bicycles on rail cars.
- Emerging techniques for storing bicycles at transit hubs, such as high-capacity bike parking at transit stations and full-service staffed bicycle parking.
- More on-road bicycle and transit facilities, such as shared bicycle and bus and bicycle and high-occupancy vehicle lanes.
- New methods of bicycle and transit education, such as bus bicycle rack demonstrations for bicyclists and share-the-road training for bus drivers.
- More coordination with local jurisdictions to provide bicycle access improvements in areas around transit stops and to include bicycle access information on transit maps.
- New performance measures for evaluating the effectiveness of bicycle services.

As a result of this effort, several topics are suggested for future study. Three of these topics are quantifying the amount of patronage and demand for bicycle and transit services, comparing the benefits and costs of these services, and recommending ways to increase the use of bicycle-related transit services through marketing.

In addition, more research is needed to quantify the number and types of people that use bicycle-related transit services. A first step toward obtaining this information is to develop data collection methods to record and survey bicycle and transit patrons. Previous counting and survey methods should be reviewed. Although a few agencies have surveyed bicycle customers and used new technologies to count bicycle boardings, these methods should be refined and new techniques tested. Once efficient and reliable methods of counting and surveying bicycle and transit users are established, researchers could conduct detailed studies to answer the following questions:

- How many customers started using transit because of new bicycle services, rather than existing transit customers switching from some other mode to using bicycles? (Several transit agencies have found an increase in the use of bicycle services over time and increases when bicycle service was expanded. Anecdotal evidence indicates that some of these additional users would not have taken transit if bicycle services were not offered. However, new research is needed to provide concrete evidence of the effect of bicycle services on transit ridership.)
- What socioeconomic groups are using bicycle-related transit services?
- What are the purposes of bicycle-on-transit trips?

A second major research effort is needed to analyze the economics of bicycle and transit integration programs. At a basic level, research is needed to determine whether revenue from additional bicycle transit riders is greater than the expense of providing the bicycle services. More in-depth economic analysis could compare the costs of bicycle and transit integration programs with a broad range of benefits, such as:

- Providing customers with more choices of modes for accessing transit;
- Improved public image created by offering bicycle services;
- Additional political support from bicycle advocates; and
- Other benefits, such as reductions in the number of automobiles on congested roadways, reductions in automobile emissions, improvements in public health owing to increased physical activity of bicycle and transit users, etc.

An economic analysis could also be conducted from the perspective of the individual bicycle and transit user. This analysis should consider out-of-pocket costs, travel time differences, personal physical health benefits and risks, and other tradeoffs between using bicycle-related transit services and other travel modes.

Finally, there is a need to understand what types of marketing strategies are most effective in increasing the use of bicycle-related transit services. Researchers could determine which elements of bicycle and transit integration are the most attractive to potential customers. This analysis could incorporate information about the types of people that currently use bicycle services and the most common types of bicycle–transit trips. Current marketing efforts might be evaluated and new techniques examined. The results of this research may enable transit agencies to design more effective marketing strategies in the future.

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APPENDIX A
On-Line Bicycle and Transit Integration Policies

Transit Agency (Location)	Transit Agency Main Website and Bicycle Policy Web Page Title	Type of Bicycle Service
Calgary Transit (Calgary, Alberta)	http://www.calgarytransit.com "Bikes on CT"	Bicycle on bus; Bicycle on light rail
Central Ohio Transit Authority (Columbus, OH)	http://www.cota.com "Bike 'n Bus"	Bicycle on bus
Charlotte Area Transit System (Charlotte, NC)	http://www.charmeck.org "Bike Racks"	Bicycle on bus
Chicago Transit Authority (Chicago, IL)	http://transitchicago.com "Bike & Ride" brochure	Bicycle on bus; Bicycle on heavy rail
Long Beach Transit (Long Beach, CA)	http://www.lbtransit.com "Rack 'n Roll"	Bicycle on bus
Maryland Transit Administration (Baltimore, MD)	http://www.mtamaryland.com "Bicycles on MTA"	Bicycle on bus; Bicycle on light rail; Bicycle on heavy rail
Massachusetts Bay Transportation Authority (Boston, MA)	http://www.mbta.com "Bikes on the T"	Bicycle on heavy rail; Bicycle on ferry
New Jersey Transit Corp. (NJ TRANSIT) (Newark, NJ)	http://www.njtransit.com "Bike Program"	Bicycle on bus; Bicycle on light rail
North County Transit District (Oceanside, CA)	http://www.gonctd.com "Bikes"	Bicycle on bus
Regional Transportation District (RTD) (Denver, CO)	http://www.rtd-denver.com "Bikes on Light Rail"; "Bike-'n-Ride"	Bicycle on bus; Bicycle on light rail
San Diego Metropolitan Transit System (San Diego, CA)	http://www.sdcommute.com "Bikes on Transit"	Bicycle on bus; Bicycle on light rail
Southeastern Pennsylvania Transportation Authority (Philadelphia, PA)	http://www.septa.org "Bike & Ride"	Bicycle on bus; Bicycle on heavy rail
Tompkins Consolidated Area Transit (Ithaca, NY)	http://www.tcatbus.com "Bikes on Buses"	Bicycle on bus
TriMet (Portland, OR)	http://www.trimet.org "Bikes on TriMet"	Bicycle on bus; Bicycle on light rail
Utah Transit Authority (Salt Lake City, UT)	http://www.rideuta.com "Bicycles on TRAX"	Bicycle on light rail
Washington State Ferries (Seattle, WA)	http://www.wsdot.wa.gov "Bicycle Pass Program"	Bicycle on ferry

APPENDIX B

Survey Questionnaire

Integration of Bicycles and Transit Questionnaire—Administered On-line, November 2004

INTRODUCTION AND GENERAL QUESTIONS

1. General Background

In the past decade, many transit agencies have developed programs that integrate bicycles and transit, such as adding bicycle-on-bus racks, allowing bicycles on transit, providing bicycle parking at bus/rail stations, and working with local agencies to create bikeways that access transit. These programs have been the result of increased awareness of bicycling as a viable component of the transportation system. The result, in many cases, has been increased transit and bicycle usage.

This survey is intended to gather information on these types of bicycle and transit integration programs so that other transit agencies can learn from these experiences. Your responses will be used to create an updated TCRP Integration of Bicycles and Transit Synthesis. We would like you to fill out this survey as completely as possible, but you do not need to respond to every question—in some cases you may not have the information available or have time to research your response. Any information that you can provide will be useful.

If you have any questions about this survey, please contact Bob Schneider of Toole Design Group at 301-362-1600, ext. 107. Thank you for taking the time to complete this survey!

Please enter your general background information into the cells below:

1. Transit Agency Name/Address

Transit Agency Name:
Street:
City:
State/Province:
Zip/Postal Code:

2. Contact Information

Contact Name:
Title:
Telephone:
Fax:
E-mail Address:
Bike on Transit Web Page Address (if available):

3. Transit Agency Background

Service Area Size (sq. mi):
Service Area Population:
Total Size of Active Fleet:
Annual Unlinked Passenger Trips:

2. Bicycle and Transit Integration Services Background

1. The table below lists different types of bicycle services that transit agencies may provide. Please fill in information about bicycle services that your agency currently provides or would consider providing.

	a. Year Established	b. Max. no. of bicycles that can be served per vehicle	c. Are you currently in the initial stages of developing this service?
Bike on bus (local service bus system)			
Bike on commuter/express bus			
Bike on light rail (streetcar, tramway, or trolley)			
Bike on heavy rail (metro, subway, rapid transit, or rapid rail)			
Bike on commuter rail (metropolitan rail, regional rail, suburban rail)			
Bike on trolley bus			
Bike on ferry			
Bike on vanpool			
Bike on paratransit or taxi			
Bike parking at transit stops/stations			
Staffed bicycle facilities at stations (e.g., "bike stations")			

2. Has your agency made any efforts to inventory and/or improve bicycle access to transit stops and stations outside of the station property? Please describe.

3. Before moving to the following sections on specific bicycle services, please add any additional general comments about your agency's bicycle services that have not been covered in the section above:

3 and 4. Logic to Individual Sections

1. The questions in the remaining sections of the survey address specific types of bicycle services. Please select one of the following services provided by your agency to begin answering the relevant questions. At the end of each section, you will be given the opportunity to answer questions related to additional services or to end the survey.

___I have completed all the relevant sections and am ready to end the survey
___Bike on bus (local service bus system)
___Bike on commuter/express bus
___Bike on light rail
___Bike on heavy rail
___Bike on commuter rail
___Bike on trolley bus
___Bike on ferry
___Bike on vanpool
___Bike on paratransit or taxi
___Bike parking at transit stops/stations
___Staffed facilities at stations ("bike stations")
___Other (please specify):

QUESTIONS FOR AGENCIES OFFERING BIKE ON BUS SERVICE ON A LOCAL BUS SYSTEM

5. Bike on Bus (local service bus system)

1. Please provide a brief description of the bike on bus service that your agency provides (e.g., bike rack for three bicycles on the front of buses; bicycles allowed inside buses; bicycles stored in compartments on bottom or at the back of the bus):

2. How many bicyclists are served annually with this service?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle on bus loading/storage equipment?

Manufacturer:
Model:
Year of purchase:

6. What purpose does bicycle on bus service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

6. Bike on Bus (local service bus system) 2

1. If route schedules were changed, please provide additional details.

7. Bike on Bus (local service bus system) 3

1. Are there external groups or agencies that provide assistance with your agency's bicycle on bus service?
___Yes
___No

8. Bike on Bus (local service bus system) 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

9. Bike on Bus (local service bus system) 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

10. Bike on Bus (local)—Bike Policies

1. If that policy is on-line, what is the web address?

11. Bike on Bus (local) Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for this bicycle on bus service (including advertising educational classes for bike on transit users)?
___Yes
___No

12. Bike on Bus (local) Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

13. Bike on Bus (local) Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle on bus service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation to this bicycle service? (You may list new data or data that are already being collected by your agency.)

3. If your agency has established any performance measures for this bicycle service, please list them below. State whether or not these

bicycle-related performance measures are included in your agency's overall performance measures.

14. Bike on Bus (local) Usage Patterns and User Demographics

1. How has the number of people using bicycle on bus service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

15. Bike on Bus (local) Cost

1. What was the initial quantity of equipment your agency purchased/developed for its bicycle on bus service?

2. What was the original capital cost of your agency's bicycle on bus equipment?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's bicycle on bus equipment?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on bus equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded its bicycle on bus services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

16. Bike on Bus (local) Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles on the bus				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

17. Bike on Bus (local) Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle on bus service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

18. Bike on Bus (local) Training and Education

1. Please describe any training or education that your agency offers for bicycle on bus services to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations, or other educational materials for use in training or education sessions?
___Yes
___No

19. Bike on Bus (local)—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle on bus program:

2. Please describe any challenges that your bicycle on bus program has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle on bus program:

QUESTIONS FOR AGENCIES OFFERING BIKE ON BUS SERVICE ON A COMMUTER/EXPRESS BUS SYSTEM

20. Bike on Bus (commuter/express bus system)

1. Please provide a brief description of the bike on commuter bus service that your agency provides (e.g., bike rack for three bicycles on the front of buses; bicycles allowed inside buses; bicycles stored in compartments on bottom or at the back of the bus):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle on bus loading/storage equipment?

Manufacturer:
Model:
Year of purchase:

6. What purpose does bicycle on commuter bus service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

21. Bike on Bus (commuter/express bus system) 2

1. If route schedules were changed, please provide additional details.

22. Bike on Bus (commuter/express bus system) 3

1. Are there external groups or agencies that provide assistance with your agency's bicycle on bus service?
___Yes
___No

23. Bike on Bus (commuter/express bus system) 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

24. Bike on Bus (commuter/express bus system) 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

25. Bike on Bus (commuter/express)—Bike Policies

1. If that policy is on-line, what is the web address?

26. Bike on Bus (commuter/express) Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for this bicycle on commuter bus service (including advertising educational classes for bike on transit users)?
___Yes
___No

27. Bike on Bus (commuter/express) Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

28. Bike on Bus (commuter/express) Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle on commuter bus service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation

to this bicycle service? (You may list new data or data that are already being collected by your agency.)

3. If your agency has established any performance measures for this bicycle service, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

29. Bike on Bus (commuter/express) User Patterns

1. How has the number of people using bicycle on commuter bus service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

30. Bike on Bus (commuter/express) Cost

1. What was the initial quantity of equipment your agency purchased/developed for its bicycle on commuter bus service?

2. What was the original capital cost of your agency's bicycle on commuter bus equipment?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's bicycle on commuter bus equipment?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on commuter bus equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded its bicycle on commuter bus services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

31. Bike on Bus (commuter/express) Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles on the bus				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

32. Bike on Bus (commuter/express) Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle on commuter bus service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

33. Bike on Bus (commuter/express) Training and Education

1. Please describe any training or education that your agency offers for bicycle on commuter bus services to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations, or other educational materials for use in training or education sessions?
___Yes
___No

34. Bike on Bus (commuter/express)—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle on bus program:

2. Please describe any challenges that your bicycle on bus program has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle on bus program:

QUESTIONS FOR AGENCIES OFFERING BIKE ON LIGHT RAIL SERVICE

35. Bike on Light Rail (streetcar, tramway, or trolley)

1. Please provide a brief description of the bike on light rail service that your agency provides (e.g., bike rack for five bicycles in front of each rail car; bicycles allowed inside rail cars; bicycle allowed in the last rail car only):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle on light rail loading/storage equipment?

Manufacturer:
Model:
Year of purchase:

6. What purpose does bicycle on light rail service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

36. Bike on Light Rail 2

1. If route schedules were changed, please provide additional details.

37. Bike on Light Rail 3

1. Are there external groups or agencies that provide assistance with your agency's bicycle on light rail service?
___Yes
___No

38. Bike on Light Rail 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

39. Bike on Light Rail 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

40. Bike on Light Rail—Bike Policies

1. If that policy is on-line, what is the web address?

41. Bike on Light Rail Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for this bicycle on bus service (including advertising educational classes for bike on transit users)?
___Yes
___No

42. Bike on Light Rail Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

43. Bike on Light Rail Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle on light rail service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation to this bicycle service? (You may list new data or data that are already being collected by your agency.)

3. If your agency has established any performance measures for this bicycle service, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

44. Bike on Light Rail Usage Patterns and User Demographics

1. How has the number of people using bicycle on light rail service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

45. Bike on Light Rail Cost

1. What was the initial quantity of equipment your agency purchased/developed for its bicycle on light rail service?

2. What was the original capital cost of your agency's bicycle on light rail equipment?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's bicycle on light rail equipment?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on light rail equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded its bicycle on light rail services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

46. Bike on Light Rail Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles on the rail car				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

47. Bike on Light Rail Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle on light rail service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

48. Bike on Light Rail Training and Education

1. Please describe any training or education that your agency offers for bicycle on light rail services to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations, or other educational materials for use in training or education sessions?
___Yes
___No

49. Bike on Light Rail—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle on light rail program:

2. Please describe any challenges that your bicycle on light rail program has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle on light rail program:

QUESTIONS FOR AGENCIES OFFERING BIKE ON HEAVY RAIL SERVICE

50. Bike on Heavy Rail

1. Please provide a brief description of the bike on heavy rail service that your agency provides (e.g., bike rack for five bicycles in each rail car; bicycles allowed inside rail cars; bicycles in baggage compartments):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle on heavy rail loading/storage equipment?

Manufacturer:
Model:
Year of purchase:

6. What purpose does bicycle on heavy rail service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

51. Bike on Heavy Rail 2

1. If route schedules were changed, please provide additional details.

52. Bike on Heavy Rail 3

1. Are there external groups or agencies that provide assistance with your agency's bicycle on bus service?
___Yes
___No

53. Bike on Heavy Rail 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

54. Bike on Heavy Rail 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

55. Bike on Heavy Rail—Bike Policies

1. If that policy is on-line, what is the web address?

56. Bike on Heavy Rail Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for this bicycle on heavy rail service (including advertising educational classes for bike on transit users)?
___Yes
___No

57. Bike on Heavy Rail Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

58. Bike on Heavy Rail Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle on heavy rail service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

59. Bike on Heavy Rail Usage Patterns and User Demographics

1. How has the number of people using bicycle on heavy rail service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

60. Bike on Heavy Rail Cost

1. What was the initial quantity of equipment your agency purchased/developed for its bicycle on heavy rail service?

2. What was the original capital cost of your agency's bicycle on heavy rail equipment?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's bicycle on heavy rail equipment?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on heavy rail equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded its bicycle on heavy rail services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

61. Bike on Heavy Rail Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles on the rail car				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

62. Bike on Heavy Rail Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle on heavy rail service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

63. Bicycle on Heavy Rail—-Training and Education

1. Please describe any training or education that your agency offers for bicycle on heavy rail services to the following groups:

Bicyclists:
Transit Operators (e.g., train conductors):
Transit agency staff:

64. Bike on Heavy Rail—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle on heavy rail program:

2. Please describe any challenges that your bicycle on heavy rail program has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle on heavy rail program:

QUESTIONS FOR AGENCIES OFFERING BIKE ON COMMUTER RAIL SERVICE

65. Bike on Commuter Rail

1. Please provide a brief description of the bike on commuter rail service that your agency provides (e.g., bike rack for five bicycles in front of each rail car; bicycles allowed inside rail cars; bicycles in baggage compartments):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle on commuter rail loading/storage equipment?

Manufacturer:
Model:
Year of purchase:

6. What purpose does bicycle on commuter rail service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Negative	Neutral
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

66. Bike on Commuter Rail 2

1. If route schedules were changed, please provide additional details.

67. Bike on Commuter Rail 3

1. Are there external groups or agencies that provide assistance with your agency's bicycle on commuter rail service?
___Yes
___No

68. Bike on Commuter Rail 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

69. Bike on Commuter Rail 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

70. Bike on Commuter Rail—Bike Policies

1. If that policy is on-line, what is the web address?

71. Bike on Commuter Rail Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for this bicycle on commuter rail service (including advertising educational classes for bike on transit users)?
___Yes
___No

72. Bike on Commuter Rail Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

73. Bike on Commuter Rail Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle on commuter rail service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation to this bicycle service? (You may list new data or data that are already being collected by your agency.)

3. If your agency has established any performance measures for this bicycle service, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

74. Bike on Commuter Rail Usage Patterns and User Demographics

1. How has the number of people using bicycle on commuter rail service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

75. Bike on Commuter Rail Cost

1. What was the initial quantity of equipment your agency purchased/developed for its bicycle on commuter rail service?

2. What was the original capital cost of your agency's bicycle on commuter rail equipment?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's bicycle on commuter rail equipment?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on commuter rail equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded its bicycle on commuter rail services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

76. Bike on Commuter Rail Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles on the commuter rail				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

77. Bike on Commuter Rail Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle on commuter rail service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

78. Bike on Commuter Rail Training and Education

1. Please describe any training or education that your agency offers for bicycle on commuter rail services to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations, or other educational materials for use in training or education sessions?
___Yes
___No

79. Bike on Commuter Rail—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle on commuter rail program:

2. Please describe any challenges that your bicycle on commuter rail program has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle on commuter rail program:

QUESTIONS FOR AGENCIES OFFERING BIKE ON TROLLEY BUS SERVICE

80. Bike on Trolley Bus

1. Please provide a brief description of the bike on trolley bus service that your agency provides (e.g., bike rack for three bicycles on the front of buses; bicycles allowed inside buses; bicycles stored in compartments on bottom or at the back of the bus):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle on bus loading/storage equipment?

Manufacturer:
Model:
Year of purchase:

6. What purpose does bicycle on trolley bus service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

81. Bike on Trolley Bus 2

1. If route schedules were changed, please provide additional details.

82. Bike on Trolley Bus 3

1. Are there external groups or agencies that provide assistance with your agency's bicycle on trolley bus service?
___Yes
___No

83. Bike on Trolley Bus 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

84. Bike on Trolley Bus 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

85. Bike on Trolley Bus Policies

1. If that policy is on-line, what is the web address?

86. Bike on Trolley Bus Policies

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for this bicycle on trolley bus service (including advertising educational classes for bike on transit users)?
___Yes
___No

87. Bike on Trolley Bus Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

88. Bike on Trolley Bus Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle on trolley bus service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation to this bicycle service? (You may list new data or data that is already being collected by your agency?)

3. If your agency has established any performance measures for this bicycle service, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

89. Bike on Trolley Bus Usage Patterns and User Demographics

1. How has the number of people using bicycle on trolley bus service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

90. Bike on Trolley Bus Cost

1. What was the initial quantity of equipment your agency purchased/developed for its bicycle on trolley bus service?

2. What was the original capital cost of your agency's bicycle on trolley bus equipment?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's bicycle on trolley bus equipment?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on bus equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded its bicycle on trolley bus services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

91. Bike on Trolley Bus Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles on the trolley bus				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

92. Bike on Trolley Bus Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle on trolley bus service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

93. Bike on Trolley Bus Training and Education

1. Please describe any training or education that your agency offers for bicycle on bus services to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations, or other educational materials for use in training or education sessions?
___Yes
___No

94. Bike on Trolley Bus—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle on trolley bus program:

2. Please describe any challenges that your bicycle on trolley bus program has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle on trolley bus program:

QUESTIONS FOR AGENCIES OFFERING BIKE ON FERRY SERVICE

95. Bike on Ferry

1. Please provide a brief description of the bike on ferry service that your agency provides (e.g., bike rack for ten bicycles on ferry; bicycles allowed on ferries in possession of passengers; bicycles allowed in storage in compartments on ferries):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle on ferry loading/storage equipment?

Manufacturer:
Model:
Year of purchase:

6. What purpose does bicycle on ferry service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

96. Bike on Ferry 2

1. If route schedules were changed, please provide additional details.

97. Bike on Ferry 3

1. Are there external groups or agencies that provide assistance with your agency's bicycle on ferry service?
___Yes
___No

98. Bike on Ferry 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

99. Bike on Ferry 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

100. Bike on Ferry—Bike Policies

1. If that policy is on-line, what is the web address?

101. Bike on Ferry Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for this bicycle on ferry service (including advertising educational classes for bike on transit users)?
___Yes
___No

102. Bike on Ferry Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

103. Bike on Ferry Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle on ferry service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation to this bicycle service? (You may list new data or data that are already being collected by your agency.)

3. If your agency has established any performance measures for this bicycle service, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

104. Bike on Ferry Usage Patterns and User Demographics

1. How has the number of people using bicycle on ferry service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

105. Bike on Ferry Cost

1. What was the initial quantity of equipment your agency purchased/developed for its bicycle on ferry service?

2. What was the original capital cost of your agency's bicycle on ferry equipment?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's bicycle on ferry equipment?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on ferry equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded its bicycle on bus services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

106. Bike on Ferry Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles on the ferry				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

107. Bike on Ferry Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle on ferry service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

108. Bike on Ferry Training and Education

1. Please describe any training or education that your agency offers for bicycle on ferry services to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations, or other educational materials for use in training or education sessions?
___Yes
___No

109. Bike on Ferry—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle on ferry program:

2. Please describe any challenges that your bicycle on ferry program has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle on ferry program:

QUESTIONS FOR AGENCIES OFFERING BIKE ON VANPOOL SERVICE

110. Bike on Vanpool

1. Please provide a brief description of the bike on vanpool service that your agency provides (e.g., bike rack for two bicycles on the back of vans; bike rack for four bicycles on top of vans):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle on vanpool loading/storage equipment?

Manufacturer:
Model:
Year of purchase:

6. What purpose does bicycle on vanpool service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

111. Bike on Vanpool 2

1. If route schedules were changed, please provide additional details.

112. Bike on Vanpool 3

1. Are there external groups or agencies that provide assistance with your agency's bicycle on vanpool service?
___Yes
___No

113. Bike on Vanpool 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

114. Bike on Vanpool 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

115. Bike on Vanpool—Bike Policies

1. If that policy is on-line, what is the web address?

116. Bike on Vanpool Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for this bicycle on bus service (including advertising educational classes for bike on transit users)?
___Yes
___No

117. Bike on Vanpool Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

118. Bike on Vanpool Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle on vanpool service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation to this bicycle service? (You may list new data or data that is already being collected by your agency.)

3. If your agency has established any performance measures for this bicycle service, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

119. Bike on Vanpool Usage Patterns and User Demographics

1. How has the number of people using bicycle on vanpool service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

120. Bike on Vanpool Cost

1. What was the initial quantity of equipment your agency purchased/developed for its bicycle on vanpool service?

2. What was the original capital cost of your agency's bicycle on vanpool equipment?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's bicycle on vanpool equipment?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on vanpool equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded its bicycle on vanpool services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

121. Bike on Vanpool Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles on the vans				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

122. Bike on Vanpool Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle on vanpool service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

123. Bike on Vanpool Training and Education

1. Please describe any training or education that your agency offers for bicycle on vanpool services to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations, or other educational materials for use in training or education sessions?
___Yes
___No

124. Bike on Vanpool—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle on vanpool program:

2. Please describe any challenges that your bicycle on vanpool program has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle on vanpool program:

QUESTIONS FOR AGENCIES OFFERING BIKE ON PARATRANSIT SERVICE

125. Bike on Paratransit or Taxi

1. Please provide a brief description of the bike on paratransit/taxi service that your agency provides (e.g., bike rack for two bicycles on back of vans; bike rack for four bicycles on top of vans):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle on paratransit/taxi loading/storage equipment?

Manufacturer:
Model:
Year of purchase:

6. What purpose does bicycle on paratransit/taxi service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

126. Bike on Paratransit/Taxi 2

1. If route schedules were changed, please provide additional details.

127. Bike on Paratransit/Taxi 3

1. Are there external groups or agencies that provide assistance with your agency's bicycle on paratransit/taxi service?
___Yes
___No

128. Bike on Paratransit/Taxi 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

129. Bike on Paratransit/Taxi 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

130. Bike on Paratransit or Taxi—Bike Policies

1. If that policy is on-line, what is the web address?

131. Bike on Paratransit or Taxi Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

Public official(s) (mayor, governor, council, etc.)
Board of directors
Agency director
Top-level agency staff
Mid-level agency staff
Other (please specify):

2. Has your agency done marketing programs for this bicycle on paratransit/taxi service (including advertising educational classes for bike on transit users)?
___Yes
___No

132. Bike on Paratransit or Taxi Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

133. Bike on Paratransit or Taxi Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle on paratransit/taxi service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation to this bicycle service? (You may list new data or data that is already being collected by your agency.)

3. If your agency has established any performance measures for this bicycle service, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

134. Bike on Paratransit/Taxi Usage Patterns and User Demographics

1. How has the number of people using bicycle on paratransit/taxi service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

135. Bike on Paratransit or Taxi Cost

1. What was the initial quantity of equipment your agency purchased/developed for its bicycle on paratransit/taxi service?

2. What was the original capital cost of your agency's bicycle on paratransit/taxi equipment?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's bicycle on paratransit/taxi equipment?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on paratransit/taxi equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded its bicycle on paratransit/taxi services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

136. Bike on Paratransit or Taxi Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles on the vehicles				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

137. Bike on Paratransit or Taxi Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle on paratransit/taxi service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

138. Bike on Paratransit or Taxi Training and Education

1. Please describe any training or education that your agency offers for bicycle on paratransit/taxi services to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations, or other educational materials for use in training or education sessions?
___Yes
___No

139. Bike on Paratransit or Taxi—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle on paratransit/taxi program:

2. Please describe any challenges that your bicycle on paratransit/taxi program has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle on paratransit/taxi program:

QUESTIONS FOR AGENCIES OFFERING BIKE PARKING AT TRANSIT STOPS/STATIONS

140. Bike Parking at Transit Stops/Stations

1. Please provide a brief description of the bike parking service that your agency provides (e.g., 50 bike racks at train stations; 2 bike racks at each bus stop; 10 lockers at train station):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's bicycle racks and lockers? (Enter information for different types of racks and lockers if necessary.)

Manufacturer #1:
Model #1:
Year of purchase #1:
Manufacturer #2:
Model #2:
Year of purchase #2:
Manufacturer #3:
Model #3:
Year of purchase #3:

6. What purpose does the bike parking serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to its bicycle parking services over time? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service (check appropriate box)?

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Are there external groups or agencies that provide assistance with your agency's bicycle parking service?
___Yes
___No

141. Bike Parking at Transit Stops/Stations 2

1. If there are external groups or agencies that provide assistance, please provide additional details.

142. Bike Parking at Transit Stops/Stations 3

1. Does your agency have any policies addressing the placement of bicycle parking facilities at transit stops/stations (i.e., within 50 feet of a station entrance)?

2. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

143. Bike Parking at Transit Stops/Stations Bike Policies

1. If that policy is on-line, what is the web address?

144. Bike Parking at Transit Stops/Stations Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for bicycle parking (including advertising educational classes for bike on transit users)?
___Yes
___No

145. Bike Parking at Transit Stops/Stations Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

146. Bike Parking at Transit Stops/Stations Policies 4

1. What types of data does your agency collect to quantify the number and types of bicyclists using bicycle parking?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicyclists using racks			
Counts of bicyclists using lockers			
Surveys of bicycle rack and locker users			
Inventories of bicycle parking spaces			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation

to bicycle parking? (You may list new data or data that are already being collected by your agency.)

3. If your agency has established any performance measures for bicycle parking, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

147. Bike Parking at Transit Usage Patterns and User Demographics

1. How has the number of people using bicycle parking changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle parking reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use bicycle parking (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using bicycle parking (if known)?

148. Bike Parking at Transit Stops/Stations Cost

1. What was the initial quantity of bicycle racks and lockers your agency purchased/developed for its bicycle parking service?

2. What was the original capital cost of your agency's bicycle racks and lockers?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original bikes and lockers?

5. What is the annual cost of maintaining your agency's bicycle racks and lockers?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain its bikes and lockers?

8. How much staff time does your agency spend on bicycle racks and lockers each year?

9. Were your agency's bicycle racks and lockers installed when the transit stops/stations were created or were they retrofitted?
___Included with original stops/stations
___Retrofitted

10. If your agency has expanded its bicycle parking services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

149. Bike Parking at Transit Stops/Stations Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Theft/damage to bicycles in racks				
Theft/damage to bicycles in lockers				
Damage to bicycle racks				
Damage to bicycle lockers				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

150. Bike Parking at Transit Stops/Stations Restrictions/Rules

1. Please describe any restrictions that your agency places on bicycle parking in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Special permits required:
Special fees required:

2. If your agency requires permission to use bicycle lockers, how do bicyclists make requests to get permits to use the lockers?

151. Agency Role in Providing Bicycle Parking

1. Is your agency responsible for providing bicycle parking near transit stops? If not, what agency is responsible?

2. Does your agency do any formal assessments of bicycle parking needs? Are bicycle parking needs addressed only by request?

152. Bike Parking at Transit Stops/Stations—Other Issues

1. Are bike racks located within a paid area or fare gate perimeter at transit stations?

2. Do stations have an attendant booth? If yes, is bike parking typically located in view of the attendant?

3. Are day-use or short-term bike lockers available? If yes, how are they locked (built-in electronic lock, user-provided lock, etc.)?

4. Please describe any maintenance issues related to your agency's bicycle parking program:

5. Please describe any challenges that your bicycle parking program has faced (e.g., obstacles to implementation, lessons learned, etc.):

6. Please describe any innovative or particularly successful aspects of your agency's bicycle parking program:

QUESTIONS FOR AGENCIES PROVIDING STAFFED BICYCLE FACILITIES AT TRANSIT STATIONS

153. Staffed Facilities at Stations ("bike stations")

1. Please provide a brief description of any bike station services that your agency provides (e.g., one bike parking, repair and maintenance facility at main transit hub, bike parking, bike rental, and shower facilities at two transit stations):

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What organization, agency, or company designed and/or constructed your agency's bike station(s)?

6. What year was your agency's first bike station established?

7. What purpose does your agency's bike station serve? How does it contribute to the agency's mission?

8. Has your agency made alterations to the bicycle station(s) since its inception? If yes, how has the service been altered and why?

9. How have each of the following groups reacted to this bicycle service? (check appropriate box)

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

10. Please provide any additional comments on the reactions of various groups referred to in the previous question.

11. Are there external groups or agencies that provide assistance with the bicycle stations?
___Yes
___No

154. Staffed Facilities at Stations ("bike stations") 2

1. If there are external groups or agencies that provide assistance, please provide additional details.

155. Staffed Facilities at Stations ("bike stations") 3

1. Does your agency have a written policy addressing bicycle stations?
___Yes
___No

156. Staffed Facilities (bike stations) Bike Policies

1. If that policy is on-line, what is the web address?

157. Staffed Facilities (bike stations) Policies 2

1. At what level within your agency was your written policy on bicycle stations approved?
___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for bicycle stations (including advertising educational classes for bike on transit users)?
___Yes
___No

158. Staffed Facilities (bike stations) Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

159. Staffed Facilities (bike stations) Policies 4

1. What types of data does your agency collect to quantify the number and types of people using the bicycle station(s)?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle station users			
Surveys of bicycle station users			
Counts of bicycles parked at bicycle station(s)			
Inventories of bicycle parking space			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation to bicycle stations? (You may list new data or data that are already being collected by your agency.)

3. If your agency has established any performance measures for the bicycle stations, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

160. Staffed Facilities Usage Patterns and User Demographics

1. How has the number of people using the bicycle stations changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that your bicycle station reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use your agency's bicycle station(s) (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using your bicycle station (if known)?

161. Staffed Facilities (bike stations) Cost

1. What was the original capital cost of each bicycle station?

2. What percentage of the original capital cost of each bike station was paid by your transit agency?

3. What source(s) of funding did your agency use to pay for the original capital cost?

4. What is the annual cost of operating each bicycle station?

5. What percentage of operating costs of each bicycle station is paid by your transit agency?

6. What source(s) of funding does your agency use to maintain its bicycle stations?

7. How much staff time does your agency spend on its bike stations each year?

8. Was each bicycle station established during the construction of a building or other capital improvement or was it retrofitted?
___Constructed with original building
___Retrofitted

9. If your agency has expanded its bicycle station services, please describe this expansion below. Please reference the date of expansion, quantity, and cost of additional equipment.

162. Staffed Facilities (bike stations) Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Theft/damage to bicycles parked at station				
Damage to property at station (including bike racks)				
Crimes committed on bike station users				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

163. Staffed Facilities (bike stations) Restrictions/Rules

1. Please describe any restrictions that your agency has on the use of bicycle stations:

Time of day and day of week bicycles stations are closed:
Types of bicycles prohibited:
Special permits required:
Special fees required:

2. If your agency requires permission to use the bicycle station(s), how do bicyclists make requests to get permits to use the bicycle station?

164. Staffed Facilities (bike stations) Training and Education

1. Please describe any training or education that your agency offers for bicycle station services to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations, or other educational materials for use in training or education sessions?
___Yes
___No

165. Staffed Facilities (bike stations)—Other Issues

1. Please describe any maintenance issues related to your agency's bicycle stations:

2. Please describe any challenges that your agency has faced in relation to the bicycle station(s) (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of your agency's bicycle station:

QUESTIONS FOR AGENCIES OFFERING OTHER BICYCLE SERVICES

166. Other Services

1. Please provide a brief description of any other services that your agency provides.

2. How many bicyclists are served annually?

3. List any obstacles to providing this service (your agency may have addressed them or still be faced by them).

4. What groups have been instrumental in advocating for this service?

5. What are the manufacturer, model, and year of purchase of your agency's equipment for this service?

Manufacturer:
Model:
Year of purchase:

6. What purpose does this service serve? How does it contribute to the agency's mission?

7. Has your agency made alterations to this bicycle service since its inception? If yes, how has the service been altered and why?

8. How have each of the following groups reacted to this bicycle service? (check appropriate box)

	Positive	Neutral	Negative
Bicyclists			
Regular transit users			
Transit vehicle operators (e.g., bus drivers, train conductors)			
Transit agency staff			
General public			

9. Please provide any additional comments on the reactions of various groups referred to in the previous question.

10. Were route schedules changed to accommodate this bicycle on transit service?
___Yes
___No

167. Other Services 2

1. If route schedules were changed, please provide additional details.

168. Other Services 3

1. Are there external groups or agencies that provide assistance with this bicycle service?
___Yes
___No

169. Other Services 4

1. If there are external groups or agencies that provide assistance, please provide additional details.

170. Other Services 5

1. Does your agency have a written policy addressing this bicycle service?
___Yes
___No

171. Other Services—Bike Policies

1. If that policy is on-line, what is the web address?

172. Other Services Policies 2

1. At what level within your agency was your written policy for this bicycle service approved?

___Public official(s) (mayor, governor, council, etc.)
___Board of directors
___Agency director
___Top-level agency staff
___Mid-level agency staff
___Other (please specify):

2. Has your agency done marketing programs for this bicycle service (including advertising educational classes for bike on transit users)?
___Yes
___No

173. Other Services Policies 3

1. Please list the components and costs and describe the effectiveness of the marketing program(s) below

Components of marketing program #1:
Cost of program #1:
Effectiveness of program #1:
Components of marketing program #2:
Cost of program #2:
Effectiveness of program #2:

174. Other Services Policies 4

1. What types of data does your agency collect to quantify the number of people and types of trips made using bicycle service?

	Data Collected by Agency	Data Has Been Made Available to the Public	Frequency of Data Collection
Counts of bicycle on transit users			
Surveys of bicycle on transit users			
Counts of bicyclists turned away due to lack of capacity			

2. What types of counts, demographic information, or trip purpose data would be most useful for your transit agency to obtain in relation to this bicycle service? (You may list new data or data that are already being collected by your agency.)

3. If your agency has established any performance measures for this bicycle service, please list them below. State whether or not these bicycle-related performance measures are included in your agency's overall performance measures.

175. Other Services Usage Patterns and User Demographics

1. How has the number of people using bicycle service changed since its inception? (Please provide numbers to describe changes, if possible.)

2. Are there any times that this bicycle service reaches capacity? If yes, how often is it at capacity?

3. What types of people (age, gender, income level, employment sector, etc.) use this bicycle service (if known)?

4. What types of trips (for work, school, shopping, visiting friends, etc.) are most commonly made by people using this bicycle service (if known)?

176. Other Services Cost

1. What was the initial quantity of equipment your agency purchased/developed for this service?

2. What was the original capital cost of your agency's equipment for this service?

3. What percentage of the original capital cost of this equipment was paid by your transit agency?

4. What source(s) of funding did your agency use to pay for the original capital cost of this service?

5. What is the annual cost of maintaining your agency's equipment for this service?

6. What percentage of maintenance costs of this equipment are paid by your transit agency?

7. What source(s) of funding does your agency use to maintain this service?

8. How much staff time does your agency spend on this bicycle service each year?

9. Was your agency's bicycle on bus equipment included with the original vehicles or was it retrofitted?
___Included with original vehicles
___Retrofitted

10. If your agency has expanded this service, please describe this expansion below. Please reference the date of expansion, quantity and cost of additional equipment.

177. Other Services Safety and Security

1. Please rate the magnitude of any problems you have had with the following (check appropriate box):

	No Problem	Minor Problem	Moderate Problem	Major Problem
Damage to bicycles				
Injuries to other transit passengers				
Damage to property in the transit vehicle				
Injuries to people outside transit vehicle (pedestrians)				
Damage to property in and near the street				

2. If you have safety or security problems, what has your agency done or planned to do about these problems?

3. Have any liability issues been raised (or actual lawsuits filed) in relation to this bicycle service (including concerns about terrorism/bombs)? If yes, please describe.

178. Other Services Restrictions/Rules

1. Please describe any restrictions that your agency places on this service in relation to the following categories:

Time of day and day of week bicycles are prohibited:
Types of bicycles prohibited:
Types of bicyclists prohibited (age, experience, licenses?):
Routes, lines, stops, or stations where bicycles are prohibited:
Special permits required:
Special fees required:

179. Other Services Training and Education

1. Please describe any training or education that your agency offers for this service to the following groups:

Bicyclists:
Transit vehicle operators (e.g., bus drivers):
Transit agency staff:

2. Has your agency developed any CD-ROMs, presentations or other educational materials for use in training or education sessions?
___Yes
___No

180. Other Services—Other Issues

1. Please describe any maintenance issues related to this service:

2. Please describe any challenges that your agency has faced in relation to this service (e.g., obstacles to implementation, lessons learned, etc.):

3. Please describe any innovative or particularly successful aspects of this service:

CONCLUSION

181. End/Thank you

You have completed the survey. Thank you for contributing to the TCRP Bicycle and Transit Integration Synthesis! If you have any questions about this survey, please contact Bob Schneider of Toole Design Group at 301-362-1600, ext. 107.

Abbreviations used without definitions in TRB publications:

AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NCHRP	National Cooperative Highway Research Program
NCTRP	National Cooperative Transit Research and Development Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation