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A PLAN FOR SUCCESS

by

Barbara A. Kearley

B.A. Southwestern University 1993

presented in partial fulfillment of the requirements

for the degree of

Master of Science

The University of Montana

May 2003

Approved by



Chairperson



Dean, Graduate School

6-3-03

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EXECUTIVE SUMMARY

Rapid growth in many cities is outstripping the abilities of those cities to manage and direct that growth in a fashion that promotes the overall health of the community. From the perspective of transportation, the result is often traffic congestion, negative impacts on the airshed from increased exhaust, and greater dependence on cars to navigate the city. What about alternatives? In this paper, the author addresses non-recreational bike use in urban settings as a legitimate form of transportation. This research is designed to be used by members of the community interested in reviewing the basics of bicycle planning. The author chronicles current efforts in order to develop some guidelines for future bicycle activists' endeavors in implementing bicycles into the transportation mix in their own communities.

The author examines three cities: Portland, OR; Austin, TX; and Philadelphia, PA; and the efforts ongoing in each of those cities to develop and implement a city-wide bike plan. The author highlights successful and less successful changes in transportation practices. Learning from success stories, organizing and collaborating with others, starting with easy projects, and working to create strong policy are some of the elements that lead to success.

CHAPTER ONE

Plenty of people choose to live in a standard suburban development and deal with the related traffic problems (Barnes 2000, 29). There seem to be two primary points of view about reasons for choosing to live in a suburban development. According to Knight and Mokhtarian, “consumers know what they want [and] are moving from areas with public transportation to places where service is not so good. Through their actions, they are voting for lower density. The counter argument is that consumers are choosing from what is now available- these land use and transportation services are framed by public policy and action. They argue that if the [consumers] paid for their parking spaces and absorbed the cost of their auto emissions, noise, and other externalities, their choices would surely change” (Knight and Mokhtarian 1992, 545). For those who envision a community with a strong emphasis on alternative forms of transportation including bus, bikes and pedestrian facilities, this paper is a starting point for creating that vision and tapping into existing resources. Many communities have successfully implemented intermodal forms of transportation; I believe a lot can be learned from these efforts. Through the course of this paper, I present some of the reasons to consider increased bicycle usage as well as what elements lead to success in developing more bicycle friendly transportation options in three different cities.

Though riding alone in a car is the top of the list among current transportation choices, city residents have other options: car pooling; walking; bicycling; riding the bus, light rail, or train or a combination of methods to get to their destinations. People utilize these

other options sometimes by free choice, sometimes due to financial limitations. What are the reasons to choose a form of transportation other than the auto? First, these alternatives may be less polluting and less intrusive (Table 1). As seen in this table, mass transit produces less pollution per person than does the single passenger auto.

Table 1. Pollution emitted from average work commutes in United States

<u>Mode</u>	<u>Hydrocarbons¹</u>	<u>Carbon monoxide¹</u>	<u>Nitrogen Oxides¹</u>
Rapid rail	0.2	1.0	30
Light rail	0.2	2.0	43
Transit bus	12	189	95
Van pool	22	150	24
Car pool	43	311	43
Auto ²	130	934	128

¹Grams per 100 passenger-kilometers

²Single occupant vehicle

American Public Transit Association. 1989. *Mass Transit: The Clean Air Alternative* pamphlet. Washington, D.C. Quoted in Lowe, Marsha D. 1990. *Alternatives to the Automobile: Transport for Livable Cities*. Worldwatch Paper 98. Washington DC: Worldwatch Institute.

Second, mass transit modes are also more efficient in use of energy per person (Table 2).

Table 2. Energy Intensity of Urban Transportation Modes in United States

<u>Mode</u>	<u>Number of Passengers</u>	<u>Energy Intensity¹</u>
Intercity rail	80	442
Intercity bus	40	477
Light rail	55	639
City bus	45	691
Rapid rail	60	752
Car pool	4	1144
Auto	1	4576

¹Btu per passenger-kilometer

Worldwatch Institute estimates from other sources. Quoted in Lowe, Marsha D. 1990. *Alternatives to the Automobile: Transport for Livable Cities*. Worldwatch Paper 98. Washington DC: Worldwatch Institute.

Third, other forms of transportation may not have quite the same environmental and social impacts of auto dependence. These negative impacts include destruction of neighborhoods, jobs, and natural habitats in the course of freeway construction, production of noise, development of sprawl, and excessive energy use (Knight and Mokhtarian 1992, 551). It follows that the more dense the urban population is, the less gas would be needed in the course of meeting transportation needs (Table 3).

Table 3. Urban Density and Gas Use in New York, by Area

Area	Urban Density (person/ hectare)	Annual Gasoline Use (gallons/person)
Outer Area	13	454
Whole Urban Area (Tristate metro area)	20	335
Inner Area (City of New York)	107	153
Central City (mainly Manhattan)	251	90

Peter W.G. Newman and Jeffery R. Kenworthy. Gasoline Consumption and Cities: A Comparison of US Cities with a Global Survey. APA Journal, Winter 1998. Quoted in Lowe, Marsha D. 1991. Shaping Cities: The Environmental and Human Dimensions. Worldwatch Paper 105. Washington DC: Worldwatch Institute.

However, for now, our dominant paradigm in the US seems to be the single passenger automobile. Other countries use public transportation and walking and cycling much more than citizens in the US. While development of support for public transportation systems or bike lanes may be a slow process, I believe it is a worthwhile endeavor that has been

successfully demonstrated in Western European countries (Table 4).

Table 4. Transportation Indicators in Selected Cities, by Regional Average, 1990.

<u>Region</u>	<u>Driving</u>	<u>Public Transportation</u>	<u>Walking/Cycling</u>
United States	86.4	9.0	4.6
Australia	80.4	14.5	5.1
Canada	74.1	19.7	6.2
Western Europe	42.8	38.8	18.4
Developing Asia	38.4	35.7	25.8
Wealthy Asia	20.1	59.6	20.3

Numbers do not reach 100% due to rounding

¹Per 100,000

O'Meara, Molly. 1999. Reinventing Cities for People and the Planet. Worldwatch Paper 147. Washington DC: Worldwatch Institute.

Auto dependence contributes to pollution and increased energy usage, but obviously it is not the only viable transportation choice available. In addition, dependence on our cars for the majority of our transportation needs decreases our reliance on our physical strength for completion of day to day activities. In fact, overall, our lifestyles are becoming much more sedentary. A simple way to encourage exercise is to provide the means to complete tasks by walking or bicycling. Convenience is key to encouraging this; some important elements include “a balance of residences, places of employment, entertainment facilities, and establishments offering goods and services [which] must be provided in a compact scale and design that make these forms of transportation safe and pleasant” (Corbett and Corbett 2000, 154). Neighborhood communities can be strengthened as people meet each other on the sidewalks and roads during the course of errand running by bike.

Though determined people will ride bikes on streets that offer no special accommodations

for cyclists, many more may be willing to ride in their community if motorists are reminded to share the road with them. This reminder to share may be accomplished through educational materials such as public service announcements or through physical changes to the roadway as in bike lanes and signs. Traffic calming devices may also do multiple duty: by slowing traffic through residential neighborhoods, pedestrians are safer, and many cyclists feel more confident sharing the road with autos. Though walking and bicycling are slower methods of travel, the volume of such travelers that a road can hold is greatly increased (Table 5).

Table 5. Number of Persons per Hour that One Meter-width of Lane Can Carry, Selected Travel Modes

<u>Mode</u>	<u>Operating Speed (km/hr)</u>	<u>Persons¹</u>
Auto in mixed traffic	15-25	120-220
motorway	60-70	750
Bicycle	10-14	1500
Bus in mixed traffic	10-15	2700
Pedestrian	4	3600
Suburban railway	45	4000
Bus in separate busway	35-45	5200
Surface rapid rail	35	9000

¹Per meter-width of lane per hour

United Nations. 1984. *Transportation Strategies for Human Settlements in Developing Countries*. Center for Human Settlements (Habitat): Nairobi. Quoted in Marsha D Lowe. 1989. *The Bicycle: Vehicle for a Small Planet*. Worldwatch Paper 90. Washington DC: Worldwatch Institute.

Some of the options listed above have large costs associated with them such as building and maintaining a railway system. What about costs of programs to encourage bike usage? The costs are lower generally for bike projects, but funding to do the projects, of course, is very important. One source of federal support is the Intermodal Surface

Transportation Efficiency Act (ISTEA) of 1991. This is the federal legislation that “recognized the increasingly important role of bicycling and walking in creating a balanced, intermodal transportation system” (A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program 1998) and authorizes spending levels for six years. Each state is required to fund a Bicycle and Pedestrian Coordinator in its state department of transportation to “promote and facilitate the increased use of nonmotorized transportation, including developing facilities for the use of pedestrians and bicyclists and public educational, promotional, and safety programs for using such facilities” (A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program 1998). ISTEA focused on transportation problems in a broad context and included changes in energy consumption, air pollution, and economic competitiveness as goals (Hanson 1995, 22). Additional goals of ISTEA were to preserve integrity of communities, provide increased mobility for elderly, disabled, and those at economic disadvantage, and provide a forum for public participation in planning (Hanson 1995, 22). The Transportation Equity Act for the 21st Century (TEA-21) was signed into law in 1998 and continues the effort undertaken in ISTEA. Currently TEA-21 is under discussion for reauthorization as TEA-3.

There are many avenues for seeking funds authorized initially under ISTEA and now by TEA-21. Two ways are TEA and CMAQ funds. Under TEA-21, Transportation Enhancement Activities (called TE or TEA grants) are funded by a 10% setaside from the Surface Transportation Program (STP). The funding for the entire STP program is 33.3

billion dollars. Projects that are funded by TE grants can include safety education programs, construction of bicycle facilities or pedestrian walkways, or for educational projects such as public service announcements (PSAs) and brochures (A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program 1998). The Congestion Mitigation and Air Quality Improvement Program (CMAQ) is funded at 8.1 billion dollars over the six years of the act's authorization. CMAQ funds are more specifically for transportation projects that help meet the requirements of the federal Clean Air Act. Generally the State or local entity requesting funds is required to provide 20% of the cost with the federal funds making up 80% of the remaining cost. The levels of funding described in TEA-21 are guaranteed through fiscal year 2003.

Financial incentives through TEA-21 as well as environmental and social benefits to our communities serve to gird advocates to continue promotion of bicycling. Communities can be strengthened through investing in pedestrian and bicycling facilities. In this paper, I explore the components that contribute to an effective bike plan and offer an analysis of bicycle transportation models in three cities.

CHAPTER TWO

A lot of work goes into the development of a bike plan for a city. The basics may include

...an inventory of existing facilities, usage and accident data, and identification of recreational and commuter needs. Then comes the development of a network of paths, lanes, and routes to link residential neighborhoods with activity centers. The plan document should include route descriptions, priorities, costs, and recommendations for phasing.

A good bikeway plan takes into account the safety and convenience of cyclists on the one hand and the needs of drivers on the other. Planning standards are harder to come by. For example, there is no official study to show the need for bikeways on a community level. In that case, the best a planner can do is to compile some of the reports that suggest that in areas of average density (under 8,000 people per square mile), one mile of bikeway should be provided per 1,000 people, allowing most residents to live within half a mile of the nearest segment. (Jones 1993)

Through the course of this paper, I examine and evaluate the efforts in Philadelphia, PA; Austin, TX; and Portland, OR; to develop and implement city-wide bike plans. Each of these three cities recently ranked in the top ten list of bicycle friendly cities in *Bicycling Magazine* (Cot  e 1999). Some of the criteria used in the ranking included infrastructure (marked bike lanes, bike racks, access to public transportation), supportive components (bicycle coordinator, area cycling advocates, bike-safety programs), and a budget for cycling projects (Cot  e 1999). I also chose these cities to represent three different areas of the country: Eastern, Central, and Western U.S. I am evaluating these efforts to discern the roles played by both government agents as well citizen groups and to clarify components that have led to success.

This paper focuses on the qualitative elements in the bike-planning process. Information on each city has been obtained through interviewing participants in the planning process as well as reviewing materials produced by each city. Key components include citizen participation, political climate of the city, time frame of the development and implementation of the plans, and city and citizen support before implementation of bike facilities and ongoing support. Additional components considered are those that continue to promote bicycling through education of the public via bike safety classes and advertising, development of Bike/Walk to Work week, enforcement of vehicular rules, creation of financial incentives, and involvement by local activist groups and the general public. Topics covered in interviews are included in the appendix.

Factors that indicate success in bicycling programs include increased numbers of bicyclists and pedestrians, accident reductions, development of user-friendly infrastructure, significant expenditures, staff levels, education and public info outreach, events, integration into routine government operations, publications and maps, [and] development of practical planning documents (National Bike and Walking Study 1993).

Because the recipe for success in one city may not work somewhere else due to climate, political will of the citizens, or other factors, a uniform approach may not work.

However, a history of bicycle accommodation in the three cities may still provide illumination for those people working on implementing bicycle plans in other cities.

CHAPTER THREE

The cities chosen for this project vary on many levels. However, in reviewing the history and current projects in place, it is good to keep in mind some elements that have been linked with bicycling success. According to Hiles, “the first step in planning for bicycling is to find out what people want to do on their bikes, the ways they are successful in carrying out those behaviors, and the ways in which they find it difficult to do what they want to do.... The last step in planning for bicycling, the measure of a bicycle program’s success, is not the number miles of facilities a city has built. It is the ease with which bicyclists can do what they want to do” (Hiles 1996, 79).

Philadelphia

Philadelphia is an old city, rich with the history of America. As such, expanding the use of the old narrow streets in Center City already busy with buses and cars into a place that welcomes cyclists has come as a surprise to many people. Brent Lawless, a former student at the University of Pennsylvania, one of two large universities in Center City, expressed surprise and doubt about choosing Philadelphia as a city to study for its bike friendliness. According to him, there weren’t bicyclists in Center City and there was no room for them (Lawless 2002). However, Philadelphia was highlighted as a bike friendly city in Bicycle Magazine for a good reason.

The city has spent \$850,000 over the past four years planning 300 miles of bike lanes, with another \$2.4 million going toward construction through '99. Mountain bikers in Philly don't even have to leave the city. The trails at Wissahickon Valley, a 4,167-acre park, range from gentle to technical singletrack. In '94, bicycles were

granted access to the subway system after 7 p.m. "We're now working to get the hour restriction lifted," says Sue McNamara of the Bicycle Coalition of the Delaware Valley. Likewise, bike racks are being mounted to the fronts of city buses as you read this. "The transit provider is probike," she added. Other city-backed cycling amenities over the past three years include the installation of 1,000 bike racks (with 1,000 more slated for the next two years), and placement of 1600 "Share the Road" signs that reinforce cyclists' right to the streets (Cot  e 1999).

Tom Branigan, Assistant Engineering Manager in the Department of Streets for the City of Philadelphia, is quick to respond that Center City is hospitable to bicyclists and supportive of their needs in the city setting. Of the 2400 miles of roads in Philadelphia, the city currently has between 150 and 160 miles of bike lanes with the goal of 300 miles of lanes/ bike friendly roads. In an October 2002 interview, Branigan outlined the history and direction of bike usage in Philadelphia. The Assistant Engineering Manager's role in the Streets Department is to prepare designs for street improvements, which include new roads, reconstruction, and resurfacing. Among other responsibilities in this branch of the engineering department are management of traffic signals, pavement walking systems, and managing federally funded projects. Branigan has been involved specifically in incorporating bikes into the main stream of traffic since 1992 though overall he has been with the city for thirty years. In 1992 the Bicycle Coalition of Greater Philadelphia (at one time called Bicycle Coalition of the Delaware Valley), a local bicycle advocacy group, approached the then mayor to seek funds for bike projects. The mayor set up the Mayor's Task Force on Bike Safety, which consisted of government staff and general public, to talk about challenges cyclists face in the city and how to meet those needs. The task force met for one year and came up with a series of plans for starting a bicycling program. One short-term goal was to buy and install fourteen "Share the Road" signs. To insure buy-in

from both sides, the Bicycle Coalition agreed to raise the funds to purchase the signs and the Streets Department installed them. The task force wrote a summary paper of accomplishments and recommendations for future goals.

A few years later, Branigan found out that money was available in the department that could be used in a pedestrian and bicycle project. From these funds, the Streets Department upgraded crosswalks, put in 850 bike racks, and installed 1400 "Share the Road" signs. At the same time, the department was also working on an application for CMAQ funds from ISTEA to plan, design, and do some construction on bike and pedestrian projects. The department was awarded 3.7 million dollars. The department put together a consulting team consisting of firms known nationally for their work with bike transportation issues as well as other national groups. In order to solicit public input, the department formed a citizen action committee as well as held meetings in the community. Five community meetings were held throughout the city and were mostly attended by bike advocates. Attendance from residents in the potentially affected neighborhoods was unfortunately low. The attendees gave input and directions to the consulting team. The end result of the meetings was a plan of over 300 miles of suggested roadway to accommodate bikes called the Bicycle Network. These roads are all main, arterial roads and are wide enough to accommodate bike lanes. This first plan was published in map form in 2000 for public use and education. The Bicycle Network will create "linkages to major sites related to employment, recreation, culture and tourism, retail, and institutional uses, as well as to provide connections to existing and proposed bike routes in the

counties bordering Philadelphia” (www.phila.gov/streets/the_bicycle_network.html 2/28/03).

According to Branigan, as the Streets Department worked with the public and the consulting firm, the idea of bikes as a regular part of the transportation mix was becoming more comfortable for members of the Streets Department, and the decision was made to include bike lanes when resurfacing the roads. The decision to incorporate bike lanes into the road system was seen as a service to the whole of the community and as such was institutionalized into the work of the Streets Department. August 2002 marked the production of a second map with the plan to update the map every two years. The department also contracted for the development of a video both to promote bike use and to educate the public on the accessibility of bike lanes.

The Bicycle Coalition of Great Philadelphia continues to take an active role in pushing the bicycling agenda for the city. The Coalition has 1100 members in the surrounding area that remain fairly active through community events, postcard campaigns, and volunteer night at the Coalition office. According to John Boyle, a staff member of the Bicycle Coalition, the three staff members of the Bicycle Coalition coordinate projects in conjunction with the Streets Department, such as producing the bike map, as well as conduct educational projects through schools. This educational program, Bicycle Education and Enhancement Program (BEEP), is currently the Coalition’s largest project.

With a TEA grant of \$500,000, the Coalition is able to present a pilot bike education program at 18 schools through PE class or after school for 7th and 8th graders.

What seems to have worked to make Philadelphia a bike-friendly success is use of funds for public education, as in the “Share the Road” signs and promotional materials, as well as incorporation of bikes into the transportation mix that is handled on an institutional basis rather than as a special focus or project. Because the Streets Department has taken on this responsibility, Philadelphia avoids the quagmire that faces many other cities. Frequently, planning for bikes takes years, and the engineering department is not always kept involved along the way. The department that will be putting bike plans into action needs to be involved from the beginning as an integral component of the process. Staff members and politicians, such as the current mayor, are also key to making bike projects happen. The mayor himself is a bicyclist and promotes healthier lifestyles through activity. According to Branigan, starting out was hard and required support of the mayor to get going.

Austin

Austin may rest in Texas hill country, but it's as Bohemian as you can get, thanks mostly to the University of Texas, home to 50,000 students and 20,000 bikes. The Town Lake hike-bike trail cuts along the Colorado River through the middle of Austin. At sunset, dark clouds of bats emerge from under bridges along the path. Austin has more than 110 miles of bike lanes that lead cyclists to quiet green farm land, with flats to the east and hills west of the city. And Austin is the first city in Texas to mount bike racks on its bus fleet (Cotée 1999).

In a January 2000 interview, Annick Beaudet, planner for the Bicycle and Pedestrian Program in the Transportation Division of the Department of Public Works and Transportation in the City of Austin, reviewed with me the history and goals of the bike plan for Austin. In the early 1980s, a bikeway plan was adopted after work on it for several years by a bike program coordinator. The bike coordinator position was eliminated during an economic decline in the late 1980s and early 1990s at which time the program became dormant. In 1994 the position, with some changes, was recreated due to the tremendous growth of the city and community concern about the pressure this put on the environment. The population of the area has been growing rapidly: Travis County in which Austin is located experienced a population increase of 40% from 1990 to 2000. The larger metro area encompassing Austin and San Marcos is 1.3 million people. So both the city and the surrounding counties were growing at an impressive rate. Additionally, the availability of funds from ISTEA was also incentive to get the program going again.

The focus of the bicycle planner position in the mid 1990s was how to increase ridership. Several factors discourage riders in Austin: the biggest two are the heat and the hills. However, a large population of bicyclists, thanks in part to the presence of University of Texas as well as the proximity of several older neighborhoods close to the campus whose grid layout make biking feasible, contribute to the demand for bike facilities.

Another pressure point to recreate the bike planner position was the bike community itself. Patrick Goetz is a member of the Urban Transportation Commission (UTC), which is an

advisory body to the city council. He is an outspoken bike advocate who took on civic involvement as a means to get more attention to bike transportation needs. When I spoke with him in 2003, he described his role in transportation issues. He got involved in the advocacy side of bicycling after a city helmet law requiring usage by all cyclists was passed that he did not support. He worked with other activists in a loose knit group, the League of Bicycling Voters, to repeal the law. Through League effort, the group was able to get several members of council elected that were supportive of the bicycling agenda and saw that changes were made to the law. After that push, Goetz was encouraged by other activists to apply to be on the UTC of which he has now been a member for several years. Though the League of Bicycling Voters group was successful in working on changing the helmet law, the effort left the volunteers burned out and the group is now on hiatus. No one group seems to be the voice for bike advocacy in Austin; rather, several key people are the strong supporters of bike issues.

As seems to be common to most bike programs, data is lacking. The “sense” is that people are biking, though how many people and what the length of their trips is hard to quantify. In January 2000, Brian Wolfe, of the commute solutions program of the Capital Area Metropolitan Planning Organization, estimated that bicyclists in the area have remained at about 1% for the past twenty years. However, during that time the population has doubled so that the actual number of bicyclists is rising. All normal bus routes have bike racks on them that hold two bikes per bus. The effort to combine

transportation methods seems to be fairly strong and demand remains high among students and city residents alike for more facilities to support cycling needs.

The planning department, with the assistance of students from the University of Texas, has put together Part I and Part II of a bike plan (Beaudet 2000). Part I consists of goals and objectives of the bike plan; Part II is the more technical component with specific lanes and facilities mapped out. The public was encouraged to participate in the process of planning for bikes through the comment period at meetings as the Plans were circulated through city government, including the UTC bike/pedestrian subcommittee, the Planning Commission, the Environmental Board, and the Park Board. As the Plan stood in 2000, the city Department of Transportation is required to review the specifics of the bike plans and incorporate that into road work. Unfortunately, many of the projects implemented now were approved prior to the adoption of the bike plan and not subject to its recommendations. Reasons for exclusion include right-of-way purchases that have already been completed and the expense and time needed to renegotiate the plans.

The UTC provides advice and recommendations to the city council, which, in turn, has the option to make decisions other than those recommended. Working with the city council has been a frustrating venture, but on the flip side, the strength of Austin's program seems to be the staff in various departments that drive the process (Goetz 2003). The Department of Public Works has incorporated bike planning into the department's agenda, and bike lanes are one of the elements considered in the planning process. Grant money is

available for projects but funding is slim for staff support. As of February 2003, the staff in the bicycle program consisted of a bike coordinator and a part-time bike rack program coordinator. The bike coordinator spends time using resources to get lanes on the ground and to work with other agencies to implement the goals and objectives of the bike plan.

Austin is moving ahead with a Smart Growth Initiative that will continue to strengthen and promote bicycling transportation in the city. This initiative will determine where and how Austin will continue to grow. Two components of this Initiative are the Traditional Neighborhood Development and the Transit-Oriented Development plans (<http://www.ci.austin.tx.us/smartgrowth/tnd.htm>). The Traditional Neighborhood Development design will promote a mix of residential and commercial properties in neighborhoods. Roads will be interconnected and pleasant for travel which is a change from the current suburban development model that has segregated single use zones and numerous cul-de-sacs that connect travel flow to a few larger streets. Another positive indicator of the increasing focus on bike friendly community development comes from the materials on Smart Growth: that “while it is important to accommodate cars, this pattern does not realize the full potential of these corridors [roads] as community assets. Roadways are one of our most widespread forms of public space. Through a combination of public and private efforts, these corridors could be transformed into diverse neighborhood centers that provide services, new homes, community gathering places, and additional transportation opportunities” (<http://www.ci.austin.tx.us/smartgrowth/program.htm/#seven>). In essence, “bicycle...

'friendliness' must be fully incorporated into all aspects of urban design in the short run. In the long run, that means emphasizing compact land use and development" (Goldsmith 1994, 3). Through the encouragement of Smart Growth efforts in the city as well as the efforts underway to continue bike lane development as laid out in the Bicycle Plan of 1998, and the continued active participation of advocates, Austin will continue to evolve as a bicycle friendly city.

Portland

Bikes are part of the whole "green" package here--along with development policies to discourage sprawl in the metro area. Portland also has built-in cycling advantages, such as low-sweat commuting routes along the Willamette and Columbia rivers that flank the city, and hilly terrain such as Skyline Boulevard to the west offering fitness and vistas.

Why is the phone ringing at the Portland bike-planning office with questions from around the country? Consider: "Bike Central," a public/private partnership in the prime commercial district that encourages bike commuting. For \$32 per month (\$2.50 for single visits), cyclists get access to showers and permanent lockers in one of several downtown health clubs, plus a secure bike-locker spot. Free bicycle parking is provided at major city events, courtesy of the state advocacy group, Bicycle Transportation Alliance. To help keep pace with a 77% increase in bicycle usage since '90, nearly 30 miles will be added this year to the current network of 166 miles of bike paths and lanes. "Happily, the increase in bike use is ahead of the area's population growth," notes Roger Geller, Portland's bicycle program specialist. Cycling events abound, such as the Bridge Pedal, an August fun ride that attracts more than 10,000 cyclists. It starts on the edge of downtown and uses about a dozen bridges (including the entire upper deck of I-5) to cross the Willamette River (Cotée 1999).

Portland has had the benefit of decades of state legislation that have earmarked money for urban planning to include bicycling and pedestrian planning. A bicycle bill from the early 1970s directed city planners to include bicycle and pedestrian elements; this bill continues

to be funded by one percent of the state highway fund (see appendix for text of this bill). All larger cities also had designated urban growth boundaries which pushed development to occur in more concentrated fashion. In a January 2003 interview with Roger Geller, Bicycle Coordinator for the Portland Office of Transportation, we discussed the history of the development of the bicycle program in the city. In 1994, when Geller began working for the Bike Program, the staff included a program manager and three project managers. The program was capital funded and much work was focused on building bikeways with some additional focus on policy and infrastructure. The planned mileage of bike lanes is 600 of which 250 are already developed. This is out of 3841 miles of roads in the city. The city commissioners were in support of a vibrant program and continued to budget money for the program. In 1999, however, the capital funds were no longer available to support the staff, and the program changed. Instead of a separate department that focused on bicycling, the Office of Transportation has worked to integrate bicycling needs department wide. Many of the projects now are completed in conjunction with other agencies, such as the Park Bureau. Some ongoing road projects also incorporate bike elements. Geller is focused more on policy completion now as he credits strong policy with a strong program. He is working on grant applications for federal and state money, assessing needs of the network, and working to fill in the gaps he finds.

Several factors led to the well respected bike program in place in Portland. One of these factors is the urban growth boundary restrictions that were implemented in the 1970s.

This led to development in the urban core that is concentrated; in many places, businesses

are close to housing and so are conducive to bike transportation. Additional factors are topography and climate. Although the rainy season is a bit of an impediment to many riders, the bicycling program along with advocacy groups in town, most notably the Bicycle Transportation Alliance, has worked to provide education to riders on how to cope with the weather with the result that many people bike year-round.

The Bicycle Transportation Alliance does more than provide training for cyclists; it is also a state-wide advocacy group for bike issues. It was started in 1990 to advocate for increased support for bicycle planning and continues to create public awareness of bicycle issues through programming, work on legal issues, and participation in committees. There are seven chapters around the state. The BTA provides bike safety programs for children, commuting workshops for adults, legal clinics that cover the rules of the road and cyclists rights, and coordinates the Bike Commute Challenge each year in which over 150 businesses participate by having employees tally mileage covered in bike commuting for a certain period of time.

Portland has had success with implementing a successful bike program due to local as well as state support. Geller emphasized starting with the easy projects. These projects would ideally not be very expensive, would have quick and easily identifiable benefits, and would build the constituency of supporters. A quick project would be to stripe an already wide street for a bike lane and post "Share the Road" signs. It seems to be correlated by experience that if the lanes get striped, people will ride on them. As people ride and feel

more comfortable in the flow of traffic, support may grow for additional lanes, and motorists and cyclists alike are made more aware of the multitude of demands for roadway use.

A strong state policy, such as the Bike Bill, that provides direction as well as funding, seems to have laid a lot of the groundwork for subsequent city policy directing bike transportation implementation. Another important component, and perhaps one a bit more difficult to duplicate in well established towns, is the urban growth boundary that forced development of housing and businesses to be in close proximity. With a concentration of such resources, bicycling and walking as well as riding on the mass transit systems, are easy ways to get around town.

From reviewing the history and continuing work in the cities of Philadelphia, Austin, and Portland, it seems that there is not one right way to foster bicycling. Though all three cities received the ranking of “Bicycle Friendly” by Bicycling Magazine, the degree to which each one is in fact bicycle friendly varies. Additionally, changes in the goals of the administration on the national, state, and local level also influence whether the cities continue in their development as bike friendly or whether they become stagnant in this process.

CHAPTER FOUR

One reason to review successes in planning and implementing bike plans is to learn from those experiences. It was for this reason that I chose to work on this topic. In 2000, I moved to San Antonio, TX, and wanted to participate in the process of bike planning. Bike plans seemed to be coming along very slowly while the city is growing rapidly and transportation problems are increasing. Additionally, the city of San Antonio in the summer of 1999 failed to meet the Environmental Protection Agency (EPA) clean air standards. Work on the foundations of transportation alternatives now will benefit city residents as pollution, congestion, and community quality-of-life issues continue to be discussed.

In a December 1999 interview with Scott Erickson, Public Involvement Coordinator/ Bike Coordinator at the Bexar County Metropolitan Planning Organization (BCMPO), I learned that bike planning began there in 1995. He estimated that it would be another 15 years before the core commuter bike lanes would be marked and connected with each other across the city. One problem with bike planning is that there is not a specific point person in the city or county who is a full-time bike coordinator. The work of the coordinator has been added to his current position duties. As it stands now, Bexar County, in which San Antonio is located, has a regional planning board called the Transportation Steering Committee that meets monthly to work on policy and oversight. There are three components: Technical Advisory Committee, the Bike Mobility Task Force, and the Pedestrian Mobility Task Force. The Bike Mobility Task Force went through the

Transportation Improvement Program process which is a process under TEA-21 in which short term federally projects are developed in the metropolitan planning area that support the area's long range transportation plan. These plans should include pedestrian walkways and bicycle transportation facilities. The Task Force issued a call for projects for TIP. In the course of this call for projects, neighborhood associations suggested project ideas, professional staff reviewed the proposals and through another series of meetings, determined, along with city council, the projects to fund. The Task Force completed this process to determine projects, passed the proposal to the city council for review, and the council did not respond. Despite this, the Bike Mobility Task Force did adopt a long range plan in 1995 under the provisions of ISTEA. An updated version was approved at the end of 1999.

The goal of the BCMPO is to increase ridership by improving the network of bike friendly streets. In order of priority, the focus is on off-road lanes, dedicated lanes, wide shoulders, and then shared lanes. The Public Works department has not been responsive to requests for incorporating bikes into transportation plans and has offered many negative responses to bike accommodation. These include protesting that lanes take up valuable parking spots and, furthermore, the department is too busy to handle additional demands. However, the bike coordinator continues to promote bicycling through a few major programs. One program is Bike Month which boasts a Bike Week and Bike Day and culminates in a Bikefest in which 300-400 people participate. Another part of Bike Month is "Great Bus/Bike/Car Commute" in which the results of a commute by all methods is

publicized to educate people on the differences and benefits of traveling by means other than car. A second program is the work to establish a network of feasible routes through the city. A route selection committee has been hard at work on this, and since 1995, 37 bike projects have been approved at a cost of \$3-4 million. Sixteen were in the engineering stage at the time of the interview and the first was scheduled to start in spring of 2000. In San Antonio, some cyclists have been a vocal part of the discussion on bike plans; however, they seem to lack the political clout to get response and change from governmental agencies.

What might be some options to consider in the case of San Antonio as well as in other cities seeking to develop stronger bike programs? As was made clear to me in the interviews and corroborated by readings, several key components lead to the design and implementation of a successful program. These are learning from success stories, organizing with others, starting with easy projects, working to create a strong policy, and collaborating with governmental staff members when possible.

Look to other cities, the stories of advocates, and through the literature to find out more about what contributes to bike plan success. Some things to spend time on are why bikes are an important component of transportation, what the implications of emission free transportation options are for community and environmental health, and why bicycle transportation appears to be a successful alternative in a variety of cities and nations.

There is a wealth of material at the library and on the Internet; I have listed a few sources

in the appendix of this paper.

I believe a strong advocacy group really does help keep the bike issue in focus for those members of the city council, Street Department, Transportation Department, and other pertinent departments. Both Portland and Philadelphia have well organized bike coalitions. Though Austin does not, strong advocates in the community have taken on the challenges of keeping the public eye focused on bike issues through a website, community activism, and becoming involved in bike/ pedestrian planning subcommittees. On the national level, the Thunderhead Alliance is a coalition of bicycle advocacy organizations that works to support local efforts through networking, regular training opportunities, and, via the web, access to materials such as sample grants, best practices documentation, and position papers. This national organization welcomes all groups large and small and has served as an excellent resource for the Bicycle Coalition of Greater Philadelphia, among others. Using the resources available both locally through coalitions or interest groups, statewide advocacy and the state Bicycle and Pedestrian Coordinator, and nationally through the Thunderhead Alliance, an individual can quickly plug into the work to promote bicycle transportation.

Another key to build success in a fledgling bike program is to start with an easy project or two. This might be working cooperatively with a business to install bike racks where cyclists are currently known to congregate. The rack is put to use quickly, other cyclists might want to get involved in additional projects to get their needs met, and non-bicyclists

will see that this small accommodation was not a painful compromise of their desires.

Those more difficult compromise issues can come later after some collaborative effort is started. The easy projects afford an opportunity to build support, which, again, is a key point for developing a strong bike program.

One more important element is work to create strong policy supporting bicycle transportation development. An example of a strong state and city policy is that of Portland, OR (see appendix for text). Including bikes in transportation planning, setting urban growth boundaries, and establishing a funding source were all part of the state bike bill. While the scope of this policy may be difficult to duplicate in other areas of the country, it is encouraging to know such a policy can be created and implemented. Additionally, I think a well-written policy gives support to the work undertaken to implement bike programs. The Bike Network plan in Philadelphia, while not a written policy, is still an important document to guide development. However, the potential for the program to deteriorate when staff in the Street Department or the Mayor's office changes is greater without a written policy. A written and approved policy would appear to minimize this risk.

For me, an important element in researching these histories has been learning that I am not alone and the group I am working with is not alone out there trying to make a place for bikes on the roadways of our cities. Many other cities have successful programs and there is no doubt a wealth of information can be learned from their efforts. The technical details

of needs of bicyclists is also available through publications produced by the Federal Highway Administration (FHWA) and American Association of State Highway and Transportation Officials (AASHTO). As for working on developing a plan for your community, learning from history, starting slow and easy, developing a strong policy, organizing with others, and working with the agencies in place can all contribute to developing your own success.

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**APPENDIX ONE
INTERVIEW QUESTIONS**

INTERVIEW QUESTIONS- GOVERNMENT STAFF

What is the history of implementing bike facilities?

What is in place now?

What is the long range plan?

What have been some of the successes? Some of the lessons learned? Obstacles?

What is the means for public involvement? How successful has that been?

Have any specific groups or individual citizens played an active role? Has that group's participation been effective? Do you have info on how to contact?

What mechanisms are in place to support cycling?

educational components (bike safety classes, drivers' ed, advertising), enforcement of vehicular rules, financial incentives

local activist groups/ public involvement

public sentiment

Nuts and bolts numbers

city and county budget for bike projects

bicyclists per capita

bike/auto accidents per capita

number of bike facilities (racks) per capita

type and number and ease of links with public mass transit

mileage of marked (signpost or painted) bike lanes

on roadways

off roadways (a separate commuter/recreational bike trail)

INTERVIEW QUESTIONS- ADVOCATE

How long have you been cycling?

How have you been involved in bike/ transportation issues?

What are the strengths of the bike program? Weaknesses?

What has the reception been to your efforts?

What is the response toward bike transportation issues by the public? Ridership?

What roles/ activities do you engage in to promote cycling?

**APPENDIX TWO
CONTACT INFORMATION FOR EACH CITY, BICYCLING WEBSITES, AND
OTHER RESOURCES**

Philadelphia

www.phila.gov City of Philadelphia

www.dvrpc.org Delaware Valley Regional Planning Commission

Austin

www.ci.austin.tx.us City of Austin

www.ci.austin.tx.us/bicycle/default.htm Bike info-

San Antonio

www.ci.sat.tx.us City of San Antonio

Portland

www.ci.portland.or.us City of Portland

www.trans.ci.portland.or.us/Traffic_Management/Bicycle_Program

www.trans.ci.portland.or.us/Traffic_Management/Bicycle_Program/BikeMasterPlan/Default.htm

General transportation issues

<http://www.thunderheadalliance.org/index.asp> Thunderhead Alliance- creating and strengthening advocacy groups

<http://www.aashto.org/aashto/home.nsf/FrontPage> American Association of State Highway and Transportation Officials

<http://www.walkable.org/> Walkable Communities, Inc.

<http://www.transalt.org/> Transportation Alternatives

<http://bicyclesafe.com/> How to Bike Safely (put together by Austin activist)

<http://www.transact.org/states/> Surface Transportation Policy Project- statistics on spending

<http://www.bikeleague.org/> League of American Bicyclists

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**APPENDIX THREE
OREGON BICYCLE BILL**

ORS 366.514 “The Bicycle Bill”

Funding for Bicycle and Pedestrian Facilities

366.514 Use of highway fund for footpaths and bicycle trails.

(1) Out of the funds received by the department or by any county or city from the State Highway Fund reasonable amounts shall be expended as necessary to provide footpaths and bicycle trails, including curb cuts or ramps as part of the project. Footpaths and bicycle trails, including curb cuts and ramps as part of the project, shall be provided wherever a highway, road or street is being constructed, reconstructed or relocated. Funds received from the State Highway Fund may also be expended to provide footpaths and trails along other highways, roads and streets and in parks and recreation areas.

(2) Footpaths and trails are not required to be established under subsection (1) of this section:

(a) Where the establishment of such paths and trails would be contrary to public safety;

(b) If the cost of establishing such paths and trails would be excessively disproportionate to the need or probable use; or

(c) Where sparsity of population, other available ways or other factors indicated an absence of any need for such paths and trails.

(3) The amount expended by the department or by a city or county as required or permitted by this section shall never in any one fiscal year be less than one percent of the total amount of the funds received from the highway fund. However:

(a) This subsection does not apply to a city in any year in which the one percent equals \$250 or less, or to a county in any year in which the one percent equals \$1,500 or less.

(b) A city or county in lieu of expending the funds each year may credit the funds to a financial reserve or a special fund in accordance with ORS 280.100, to be held for not more than 10 years, and to be expended for the purposes required or permitted by this section.

(c) For the purposes of computing amounts expended during a fiscal year under this subsection, the department, a city or county may record the money as expended:

(A) On the date actual construction of the facility is commenced if the facility is constructed by the city, county or department itself; or

(B) On the date a contract for the construction of the facilities is entered with a private contractor or with any other governmental body.

(4) For the purposes of this chapter, the establishment of paths, trails and curb cuts or ramps and the expenditure of funds as authorized by this section are for highway, road and street purposes. The department shall, when requested, provide technical assistance and advice to cities and counties in carrying out the purpose of this section. The department shall recommend construction standards for footpaths and bicycle trails. Curb cuts or ramps shall comply with the requirements of ORS 447.310 and rules adopted under ORS 447.231. The department shall, in the manner prescribed for marking highways under ORS 810.200, provide a uniform system of signing footpaths and bicycle trails which shall apply to paths and trails under the jurisdiction of the department and cities and counties. The department and cities and counties may restrict the use of footpaths and bicycle trails under their respective jurisdictions to pedestrians and nonmotorized vehicles, except that motorized wheelchairs shall be allowed to use footpaths and bicycle trails.

(5) As used in this section, “bicycle trail” means a publicly owned and maintained lane or way designated and signed for use as bicycle route.

[1971 c.376 2; 1979 c.825 1; 1983 c.19 1; 1983 c.338 919; 1991 c.417 7; 1993 c.503 12] 366.515 [Amended by 1971 c.376 3; 1973 c.249 39; repealed by 1975 c.436 7]

Source:

<http://www.trans.ci.portland.or.us/Plans/BicycleMasterPlan/appendixb.htm#Bicycles>
February 8, 2003

APPENDIX FOUR
CITY OF PORTLAND BICYCLE MASTER PLAN EXECUTIVE SUMMARY
(EXCERPTS)

May 1, 1996 Resolution No. 35515

Background

The Bicycle Master Plan was created over a two and a half year period with input from over 2,000 residents, including neighborhood activists, business people, parents, educators, regular cyclists, and individuals wishing to bicycle- both for the first time and more frequently. Additional input came from staff of the Portland Office of Transportation, Tri-Met, the Port of Portland, Multnomah County, Washington County, Clackamas County, Metro, the Oregon Department of Transportation, and the Portland bureaus of Planning and Parks.

The Plan provides guidance over a 20-year period for improvements that will encourage more people to ride more frequently for daily needs. The mission of the Master Plan is to make bicycling an integral part of daily life in Portland.

Key Elements

The Bicycle Master Plan addresses five key elements:

- 1) policies and objectives that form part of Portland's *Comprehensive Plan Transportation Element*;
- 2) developing a recommended bikeway network;
- 3) providing end-of-trip facilities;
- 4) improving the bicycle-transit link; and
- 5) promoting bicycling through education and encouragement.

Associated with each of these elements are objectives, action items, and five-, 10-, and 20-year benchmarks to measure progress. Where appropriate, the costs of achieving these benchmarks are included. These benchmarks and costs are found at the end of the Executive Summary.

In addition, the Plan provided bikeway design and engineering guidelines and a summary of laws relating to bicycle use.

Bicycle Transportation Policy and Objectives

Policy 6.12 of the *Transportation Element* of the City's *Comprehensive Plan* is the following statement:

Make the bicycle an integral part of daily life in Portland, particularly for trips of less than five miles, by implementing a bikeway network, providing end-of-trip facilities, improving bicycle/ transit integration, encouraging bicycle use, and making bicycling safer.

The following objectives accompany this policy statement.

Objectives:

- A. Complete network of bikeway that serves bicyclists' needs, especially for travel to employment centers, commercial districts, transit stations, institutions, and recreational destinations.
- B. Provide bikeway facilities that are appropriate to the street classifications, traffic volumes and speed on all rights-of-way.
- C. Maintain and improve the quality, operation and integrity of bikeway network facilities.
- D. Provide short- and long-term bicycle parking in commercial districts, along Main Streets, in employment centers and multifamily developments, at schools and colleges, industrial developments, special events, recreational areas, and transit facilities such as light rail stations and park-and-ride lots.
- E. Provide showers and changing facilities for commuting cyclists. Support development of such facilities in commercial buildings and at "Bike Central" locations.
- F. Increase the number of bicycle-transit trips. Support Tri-Met's "Bikes on Transit" Program.
- G. Develop and implement education and encouragement plans aimed at youth, adult cyclists, and motorists. Increase public awareness of the benefits of bicycling and of available resources and facilities.
- H. Promote bicycling as transportation to and from school.

Recommended Bikeway Network

Objectives A, B, and C, listed above, pertain to the development of the bikeway Network.

There are about 185 miles of existing and planned bicycle lanes, bicycle boulevards, and off-street paths in Portland. The bikeway network calls for the addition of approximately 445 miles to this system to create a 630 mile network of preferred and appropriate[,] convenient and attractive bikeways throughout Portland. When complete, this network should enable cyclists to find a bikeway within approximately one-quarter to one-half mile from every location in Portland.

Provide End-of-Trip Facilities

Objectives D and E pertain to providing end-of-trip facilities.

A survey undertaken for the Master Plan found sub-standard bicycle parking in the majority of Portland's commercial areas. Many public facilities, including schools and parks, were likewise deficient in adequate bicycle parking.

To address this problem, the [M]aster Plan calls for a public-private partnership to install higher levels of bicycle parking; provide for long-term bicycle parking to serve commuters, students, and others needing longer-term bicycle storage; and provide other end-of-trip services like showers, changing rooms, and clothing storage.

An estimated 1,900 short-term and 145 long-term bicycle parking spaces exist in Portland. The Plan calls for the development of an additional 8,600 short-term and 23,000 long-term spaces in 20 years.

Improving the Bicycle-Transit Link

Objective F pertains to improving the bicycle-transit link.

Two types of bicycle-transit trips are possible in Portland. Riders can take their bicycles aboard buses and light-rail through the bicycles-on-Tri-Met program, for which over 6,300 permits have been sold. From July, 1994 to June, 1995 almost 80,000 bicycles-on-transit trips were made. Bicyclists can also "bike-and-ride," making use of long-term bicycle parking at transit centers and light-rail stations. As of February, 1996 there were 56 bicycle lockers spaces at transit centers and MAX stations.

The City will continue to support and promote the Bicycles on Tri-Met program, and assist Tri-Met in providing and promoting long-term bicycle parking at the transit system to encourage bicycle use.

Promoting Bicycling Through Education and Encouragement

Objectives G and H pertain to promoting bicycling through education and encouragement.

Bicycle education is concerned with developing safe cycling skills in children, teaching adult cyclists their rights and responsibilities, and teaching motorists how to more effectively share the road with cyclists.

Encouragement includes providing a bikeway network, end-of-trip facilities, and bicycle-transit services, holding encouragement events, providing incentives, and providing information and/or maps with recommended cycling routes.

Many organizations throughout Portland provide bicycling education and encouragement. The City will continue to support these organizations as able, with the goal of having three to five annual bicycling promotion events. Additional long-term goals are to have 10 percent of children bicycling to school and 100 percent of children receiving bicycle safety education.

Providing Bikeway Design and Engineering Guidelines

The Master Plan offers detailed design and engineering guidelines for different types of bicycle facilities. Included are intersection designs, signing and marking, maintenance considerations, and bicycle parking code requirements. This information, and the text of state laws and local ordinances pertaining to bicycling, are found in the Master Plan's appendices.

Conclusion

Bicycling produces no air or noise pollution, decreases traffic congestion, reduces taxpayer burden, helps alleviate parking demand, saves energy, uses land and road space efficiently, provides mobility, saves individuals money, improves health and fitness, and is fast and fun! The success of the bicycle Master Plan will only be assured by the continued support of Portland's cycling community and other residents recognizing the benefits bicycling brings to all residents.

Source: <http://www.trans.ci.portland.or.us/Bicycles/EXECSUM.HTM> Feb. 8, 2003

**APPENDIX FIVE
STATISTICAL INFORMATION ON EACH CITY**

Philadelphia

Philadelphia County	Pennsylvania	
1,491,812	12,287,150	2001 Population estimate
-4.3%	3.4%	Percentage change in pop. 1990-2000
135	44,817	Land area in square miles
11,234	274	Persons per sq. mile

<http://quickfacts.census.gov/qfd/states/42/42101.html> March 1, 2003

Austin

Travis County	Texas	
833,797	21,325,000	2001 Population estimate
40.9%	22.8%	Percentage change in pop. 1990-2000
989	261,797	Land area in square miles
821	80	Persons per sq. mile

<http://quickfacts.census.gov/qfd/states/48/48453.html> March 1, 2003

Portland

Multnomah County	Oregon	
665,810	3,472,867	2001 Population estimate
13.1%	20.4%	Percentage change in pop. 1990-2000
435	95,997	Land area in square miles
1,518	35	Persons per sq. mile

<http://quickfacts.census.gov/qfd/states/41/41051.html> March 1, 2003

San Antonio

Bexar County	Texas	
1,417,501	21,325,000	2001 Population estimate
17.5%	22.8%	Percentage change in pop. 1990-2000
1247	261,797	Land area in square miles
1117	80	Persons per sq. mile

<http://quickfacts.census.gov/qfd/states/48/48029.html> March 1, 2003