Chapter 6: Bicycling

Imagine being able to walk out your front door, get on a bicycle and commute to work, run an errand, or just get some exercise. Impossible? Of course not. In fact, 40% of all trips made by car are two miles or less. Slightly more than half of us live within five miles of work. And just ten miles separates three-fourths of us from home and our place of employment. Obviously, all these destinations are bikable; some are walkable too.

Unfortunately our nearly single-minded approach to roadway design makes bicycle commuting difficult - if not down right dangerous - for far too many Americans. But there are many examples of communities which have made a conscious choice to create a more bicycle friendly environment. For example, the residents of Davis, California have reshaped their community in ways which allow 20% to 25% of all vehicle trips to be made by bicycle. In Groningen, Holland the bicycle commute rate is 50%. But in the U.S., only 1.7% of us commute by bicycle. In this section I will review the benefits of bicycling, the conditions needed to foster this mode of transportation, how to create a plan for improving bicycling in your community, and how to examine proposed development projects for opportunities to preserve and enhance cycling facilities.

BENEFITS OF BICYCLING

When compared to cars and SUV's, getting around by bicycle dramatically reduces air and water pollution, noise, and pedestrian injury while improving the physical and mental health of the cyclist.

No other transportation mode converts energy to locomotion as efficiently as a bicycle. If one compares the calories burned while cycling to gasoline-powered vehicles, then the cyclist gets 1,000 miles per gallon.[63] This means that bicycling generates far less pollution. For example, if you commute five miles daily by car then you emit more than a hundred pounds of pollution per year into the atmosphere.[64] With a bicycle, the emission rate is virtually zero.

According to California-based Culture Change, for each meter of width, a bikeway can carry twice as many people as a road designed for passenger cars.[65] This means half as much loss of forest, wetlands, farms and other resources for accommodating transportation needs. It also means half as much impervious area. In the section on aquatic resource impacts, I explained how increasing impervious area translates into a direct and proportional impact to the quality of streams, lakes and

[63] The Hard Way, Outside magazine, January 2000. Available for viewing at: http://web.outsideonline.com/magazine/200001/200001hardway3.html

[64] See University of California at Santa Barbara Transportation Alternatives Program website at: http://www.tps.ucsb.edu/bicycle.html

[65] *Fact Sheet #2: A Positive Alternative - Environmental Restoration and Economic Revival.* Culture Change, P.O. Box 4347, Arcata, CA 95518 USA. Available for download at: http://www.culturechange.org/factsheet2.html

other waterways. For parking lots the reduction in impervious area is far greater. Twelve bicycles can fit into the space needed to park a single car.

As will be seen in the traffic chapter, cars and other vehicles generate substantial noise which can lower property value and harm public health. A bicycle, of course, is silent. The traffic chapter of this book also shows how unsafe our roadways have become, particularly as traffic volume increases on residential streets. Bicycles poses far less of a threat to pedestrians and other vehicles.

The health benefits of bicycling are, of course, substantial. Commuting by bicycling burns nearly 500 calories per hour. Employers who encourage bicycle commuting report fewer sick days, lower health care claims, and productivity increases. Regular bicycling can cut the likelihood of heart disease in half.

THE NEEDS OF BICYCLISTS

Safety is the paramount issue when considering the needs of bicyclists. In 1999, 750 bicyclists were killed and another 51,000 were injured by cars and trucks in the United States. As traffic volume and speed increases bicycling becomes increasingly difficult along a roadway, especially those lacking a wide, dedicated bike lane. In *Bicycle Facility Selection: A Comparison of Approaches* a procedure is presented for assessing the need for bicycle facilities based upon volume and speed.[66] This procedure indicates that conditions for bicyclists are generally good when:

- road lane width is at least nine feet;
- most cars and other vehicles are traveling at a speed of less than 30 mph, and
- traffic volume does not exceed 1,000 vehicles per day (vpd), which is equivalent to the traffic generated by about a hundred homes..

When speed and volume rises above 30 mph and 2,000-3,000 vpd than a bike lane is needed to keep cycling a safe, enjoyable experience along a road. Above 35 mph or 3,000 vpd than a bike lane separated from traffic is needed.

PLANNING FOR BICYCLING

In Groningen, Holland, where 50% of the population commutes to work on bicycles, there are 10,000 miles of bike paths. In New York state, which is three times the size of Holland, there are just 250 miles of bike paths.[67] Davis, California has come to be known as the bicycle capital of the U.S. Davis has earned this reputation because of the excellent bicycle planning and implementation advocated by its citizens. Over time, any community can do the same. Each development project

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[66] *Bicycle Facility Selection: A Comparison of Approaches* is available for download from the University of North Carolina Highway Safety Research Center website: http://www.bicyclinginfo.org/pdf/bikeguide.pdf

[67] The Hard Way, Outside magazine, January 2000. Available for viewing at: http://web.outsideonline.com/magazine/200001/200001hardway3.html

offers a vital opportunity to create another segment of bicycle infrastructure. But to function efficiently infrastructure development must be guided by an overall plan.

The primary source of bicycle infrastructure funding is the federal Transportation Equity Act for the 21st Century (TEA-21), which replaced the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. TEA-21 provided $3- to $4-billion for bicycling infrastructure planning and improvements for the period of 1998 to 2004. TEA-21 is now up for reauthorization as TEA-3. One of the best sources of information on bicycle facility planning is the Bicycle Friendly Community[68] program sponsored the League of American Bicyclists. Other valuable information sources include: Community Assessment Tools developed by the National Center for Bicycling & Walking[69] and the Rails-to-Trails Conservancy[70]

SPECIFIC DEVELOPMENT PROJECTS & BICYCLING OPPORTUNITIES

Does a proposed development site adjoin an abandoned railway? Does the site contain an old road favored by mountain cyclists? Will the project take place along a road frequented by cyclists? If the answer is yes to any of these questions then the project may offer an opportunity to preserve and enhance bicycling opportunities. And, of course, there are a number of other possible scenarios in which development might improve a network of bike paths.

Each new development project can provide a valuable opportunity to improve bike trails and other low-impact transportation modes. An excellent guide on this topic is the Florida *Bicycle Facilities Planning and Design Handbook*.[71] The Florida handbook can help you evaluate the soundness of proposed bike trails or to develop your own proposal for incorporating bicycling facilities into project plans.

The applicant should be encouraged to modify their plans to incorporate these opportunities. The encouragement could take the form of changes to local zoning and subdivision regulations requiring bike path improvements. A system could also be established through which the applicant receives benefits, such as increased or bonus density, in exchange for bike path improvements.

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[68] For more information on the Bicycle Friendly Community Program, contact the League of American Bicyclists at: 202-822-1333; info@bicyclefriendlycommunity.org; League of American Bicyclists, 1612 K St. NW, Suite 800, Washington, DC 20006; http://www.bicyclefriendlycommunity.org/index.htm

[69] The National Center for Bicycling & Walking can be contacted at: 1506 21st Street NW, Suite 200 Washington, DC 20036, 202.463.6622, info@bikewalk.org, http://www.bikewalk.org

[70] Rails-to-Trails Conservancy, 1100 17th Street, 10th Floor, NW, Washington, D.C. 20036, (202) 331-9696, greenways@transact.org, http://www.trailsandgreenways.org

[71] The *Bicycle Facilities Planning and Design Handbook*, published by the Florida Department of Transportation and available for download at: http://www11.myflorida.com/Safety/ped_bike/handbooks_and_research/April%202000%20update.pdf

Local governments routinely scrutinize proposed development projects for traffic impacts. Rarely though are impacts to bicycling considered. The publication previously mentioned, *Bicycle Facility Selection: A Comparison of Approaches*, presents a procedure for assessing the suitability of a road for bicycling.[72] The procedures set forth in the publication can also be used to assess how the traffic generated by a proposed development project will impact bicycling along affected roads.

Traffic engineers routinely assess the impact of proposed development projects on congestion using a procedure known as Level Of Service or LOS. This procedure is explained in detail in the section of this book on traffic. LOS ranges from A to F, with A being free flowing traffic with virtually no delay while F is grid lock. Generally an LOS of C is considered acceptable for rural roads and D is okay for urban conditions.

In *Bicycle Facility Selection* a level of service procedure is also employed. To illustrate how this procedure might be applied to an existing road adjoining a proposed development site, let's say the road has two lanes, each 11-feet in width. These are the "travel" lanes or the lanes in which cars, trucks, and buses travel within. Let's say a bikelane five feet in width adjoins both sides of the road and is separated from the travel lanes by a painted stripe.

If most of the car and truck traffic travels at a speed of 30 mph and the volume is about 2,000 vpd (equivalent to the traffic generated by 200 homes), then the procedures presented in *Bicycle Facility Selection* says that the bicycling LOS is B. If a proposed development project adds another 700 houses and increases traffic volume from 2,000 vpd to 9,000 vpd then LOS drops to D. However, if the applicant agreed to add separated bike lanes to both sides of the road, along the entire length affected by the increased traffic volume, then LOS would remain at B.

Again, this sort of analysis is seldom practiced when a development project may impact roads with heavy bicycle use. This does not mean such an analysis should not become common place; just that you should expect resistance from conventionally-minded development-review officials.

[72] *Bicycle Facility Selection: A Comparison of Approaches* is available for download from the University of North Carolina Highway Safety Research Center website: http://www.bicyclinginfo.org/pdf/bikeguide.pdf