

MTP2030 Issue Papers: Non-motorized Transportation



Walking and bicycling conditions are affected by the quantity and quality of sidewalks, crosswalks, bikelanes and paths, system connectivity, the security and attractiveness of bicycle and pedestrian facilities, and support features such as secure bike parking and changing facilities. Land use and community design also play an important role in walking and bicycling conditions. This paper explores the issues and choices that underlie the expansion of bicycle and pedestrian (non-motorized) facilities through the life of the Metropolitan Transportation Plan (MTP) 2030. Good planning involves anticipating future needs correctly because transportation planning decisions can be self-fulfilling. If we expect demand to become more diverse we will implement different policies, helping to create a more balanced transportation system.

The Current Non-motorized Transportation System and its Use

- The basic types of non-motorized facilities:
 - Class I (Multi-Use Path): A completely separated facility designated for the use of pedestrians, bicycles, or other non-motorized transportation. The facility is separated from any street or highway by a physical space, berm, fence, or other barrier.
 - Class II (Bike Lane): A lane within a street or roadway designed for the one-way use of bicycles. It is an on-street facility with signs, striped lane markings, and pavement legends.
 - Class III (Bike Route): Any on street right-of-way recommended for bicycle travel that provides for shared use with motor vehicles or pedestrian traffic.
 - Sidewalk: A walkway separated from the roadway with a curb, constructed of a durable, hard and smooth surface, designed for preferential or exclusive use by pedestrians
 - Crosswalk: Portion of a roadway designated for pedestrian crossing, marked or unmarked. Unmarked crosswalks are the natural extension of the shoulder, curb line or sidewalk.
- Currently in the Sacramento Region out of 9 million daily trips, 100,000 (1%) ride bicycles and 450,000 (5%) walk
 - 80,000 (1%) ride transit, 4.2 million (47%) drive alone, 1.8 million (20%) drive with passengers, and 2.4 million (26%) ride in autos.
- Many people – youth, elderly, disabled, low income, or those who do not have access to and automobile – are dependent on walking and bicycling to access desired goods, services, activities, and destinations such as medical services, education and employment.
 - In 1999, roughly one-third, or 13 million of the state’s 34 million resident did not have a driver’s license (Local Government Commission).
- As urban area population grows beyond 2 million, total travel demand will also continue to grow; highway congestion becomes the expected norm, driving costs increase (delay and parking), and accessibility patterns change such that walking and bicycling become more attractive.

Why People Choose not Walk or Bicycle

- In the Fall of 2003 Caltrans District 3 conducted a series of six focus groups within the District to gather information regarding the issues and concerns of potential bicycle riders and what keeps people from bicycling. Many of these issues pertain to walking as well. Participants cited many reasons for not bicycling more, the most common are as follows:
 - Safety:
 - Unsafe facilities – potholes/cracks, debris, too narrow, no lighting, hidden from public view, etc.
 - Unsafe motorist behavior – high vehicle speeds, vehicle congestion, crowding/swerving, disobeying/unaware of traffic laws
 - Crime, child abduction
 - No safe bicycle parking
 - Lack of enforcement of vehicle laws pertaining to bicycling
 - Poor Connectivity:
 - No safe, direct route to desired destinations, especially schools
 - Poor transit connections, lack of bicycle racks on buses/trains
 - Circuitous routes increase travel time
 - Public does not know where there are existing bicycle facilities; not all jurisdictions have good bicycle maps.
 - Barriers:
 - Rivers, freeways, major arterials, large parking lots, railroad tracks, soundwalls, cul-de-sacs, and gated communities all separate pedestrians and bicyclists from their destinations.
 - Travel distance/time
 - No showers or lockers at worksite
 - Laziness
- Culture, custom, and habit are also important
 - Non-motorized transportation is generally considered a lower status of transportation compared with motorized travel, it tends to be stigmatized or considered abnormal.
 - Many communities are designed to make auto travel more convenient, influencing transportation habits.
 - As long as car use remains cheap and transportation policy remains dominated by automobiles, bicycles will continue to be used primarily for recreation and not for daily urban travel.

Ways to Encourage More Walking and Bicycling

- In the same Caltrans study participants identified strategies to encourage more walking and bicycling, including:
 - Infrastructure and other physical improvements
 - Provide safe routes that improve connectivity and access to desirable destinations such as schools, work sites, or shopping.
 - Safe crossings of barriers
 - Walk/bike-friendly transit amenities
 - Provide secure bicycle parking, showers and lockers at worksites
 - Education:
 - Educate motorists, transit operators, and cyclists on applicable laws and how to safely “share the road”.

- Educate children and parents on the positive impacts of biking or walking to schools and strategies to make it easier – “Pedestrian-Pools” or “Pedal-Pools”.
 - Create maps for all jurisdictions indicating inter-regional connections and distribute these materials region-wide.
 - Educate the public on the wide range of benefits from increased walking and bicycling such as: health, clean air, less congestion, saving money, etc.
- Enforcement of cyclists’ right to use the road

How Non-motorized Modes Compliment Other Transportation Modes

- When activity centers become congested, all modes complement each other, serving specific types of trips, instead of competing.
 - Autos, bus transit, bicycles and pedestrian all depend on roads, so when activity centers become congested it is important to accommodate all modes effectively so travelers have a real choice.
 - Carpooling, transit, and bicycling each offer certain time, cost, convenience, and personal comfort advantages as an alternative choice to driving alone, and can become more attractive for certain trips. This is especially true where bicycle and pedestrian accessible multi-modal transfer points are provided.
 - In downtowns of major cities such as San Francisco and Chicago, pedestrian congestion often exceeds vehicle congestion.

- The ultimate goal of a good transportation system is accessibility. In many situations, the best way to improve transportation is to improve walking and bicycling access to employment centers, schools, and other major destinations.
 - Improved walking and cycling conditions increase transportation choices and tend to increase non-motorized travel and reduce automobile travel.
 - These improvements do not necessarily increase travel speed or mileage; they may increase user accessibility, convenience, comfort and safety, reduce costs, or reduce the overall need for physical travel.

- Most transit trips involve non-motorized links, so walking and cycling access determines the effectiveness and efficiency of transit service.
 - Commuters are more likely to use transit if they can easily walk or bike from their home/worksites to transit stops. As a result, walking and cycling improvements are often an effective way to improve transit.
 - Research in suburban Maryland found that those within walking distance to high quality transit service were 10-45% more likely to use transit than those who had to drive for access.
 - Better intermodal connections, such as convenient park and ride locations, on-board bike racks, secure bicycle parking, safe and pleasant access routes, and short-cuts, can enhance the appeal of non-motorized and transit modes.

Non-motorized Expansion and Land Use/Community Design

- Blueprint land use policies support improved connectivity as a way to increase land use accessibility. More compact land uses and non-motorized connections identified in the Blueprint Preferred Scenario shorten trips and change travel choices: 16% by bicycle and walking, 3% by transit, and 81% by auto as.

- Public investment in non-motorized facilities and a well connected transportation system can make mixed-use, compact, and transit oriented developments more viable. Research shows people are more likely to walk or bicycle under these conditions.
 - According to a study conducted in the San Francisco Bay Area (John Holtzclaw Ph.D, Sierra Club) every time a neighborhood doubles in compactness, the number of vehicle trips residents make is reduced by 20%-30%.
 - Higher densities provide space for retailers and small businesses in convenient locations that residents can easily access by walking or bicycling.
 - Creating mixed-use communities provides opportunities for people to live within convenient walking or bicycling distance from where they work.

- The way buildings are designed and the way they relate streets and sidewalks are instrumental in creating livable, walk/bike-able communities.
 - A variety of colors, textures, materials and rooflines are more interesting and help identify individual homes.
 - Poorly placed parking, utilities, and garbage receptacles create safety and accessibility problems for pedestrian and bicyclists.
 - Replace street-fronting garages with front porches to keep eyes on the street which helps create safe, enjoyable spaces for pedestrians and cyclists.
 - Well placed landscaping provides shade, beauty, and visual interest.
 - Buildings surrounded by large parking lots create barriers to bicyclists and pedestrians and discourages the use of these modes.

- Efforts to increase connectivity and accessibility must overcome the common preference for residential cul-de-sac streets and gated communities.
 - Cul-de-sacs, soundwalls, and gated communities all limit access to and from neighborhoods, especially by bicyclists and pedestrians, by increasing the travel time and distances between destinations.
 - Short-cuts, which are closed to vehicle traffic, at the end of cul-de-sac streets, provide pedestrian and cycling connections. Short-cuts provide more route options and more direct travel between destinations, making non-motorized travel more attractive.

- There is growing demand for non-motorized oriented development.
 - According to a survey of 2,000 representative home-buying U.S. households 27% would like to be able to walk to more places from their home, and the following community amenities rated *important* or *very important*: jogging/bike trails (36%), sidewalks (28%), and shops within walking distance (19%) (NAR & NAHB, 2002)

- Sacramento must go through a transition in development patterns to achieve the transportation goals outlined in the Blueprint Preferred Scenario.
 - The Sacramento Region must plan transportation capacity, both motorized and non-motorized, investments strategically in both timing and place, to keep infill communities accessible during a transition time from edge sprawl dominated by auto travel to more compact infill where walking and bicycling become preferable.

Environmental Effects of Non-motorized Transportation

- Increases in non-motorized transportation reduces energy consumption and pollution emissions

- On average in the United States, each non-motorized mile is associated with seven reduced vehicle-miles. Short walking trips often substitute for longer automobile trips. For example, consumers may choose between walking to a nearby store or driving to a supermarket. Motorists tend to travel far more (about 3 times as much on average) as non-motorists (Litman 2004).
 - Energy consumption and pollution emissions are several times higher than average for short motorized trips when engines are cold.
- Reduced land needed for roads and parking facilities
 - Non-motorized modes require far less space for travel and parking, do not require building setbacks to mitigate traffic noise, and encourage more clustered development patterns. As a result, walk/bike-able communities can devote less land to pavement and tend to result in higher development densities than is common with more automobile-oriented transportation systems, reducing per capita land consumption.
 - The fact that a parking space is 20% larger than a typical office space illustrates space limitations on drive-alone auto commuting in larger, denser metropolitan areas.
 - Up to twelve bicycles can park in the space required for one car, pedestrians require no parking facilities.
 - Open space and resource preservation
 - Roadways tend to fragment or destroy wildlife habitat, and agricultural land.
 - Non-motorized transportation makes more efficient use of existing facilities and decreases the demand for new or expanded roadways.
 - Improved opportunities to preserve cultural resources (e.g. historic buildings).

Social Effects of Non-Motorized Transportation

- Walking and bicycling provide basic mobility and are particularly important for people who are transportation disadvantaged. Poor walking conditions can contribute to social exclusion, that is, the physical, economic and social isolation of these vulnerable populations.
- Creating accessible, well connected non-motorized facilities where public activities are encouraged improves safety, neighborhood interaction, and community cohesion, improving overall user enjoyment.
- Improved public health from increased physical activity
 - In the U.S. walking and cycling for transportation has declined by about 40% to approximately 6% of total trips since 1977 while nearly 65% of Americans are currently either overweight or obese.
 - One study found that shifting from a very sprawling region such as San Bernardino, CA to a less sprawling region such as Boston, MA would result in a reduction of 200 chronic medical conditions per 1,000 population, a 16% reduction. Increased street connectivity is significantly associated with reductions in hypertension and heart disease (Sturm, 2005).
 - Walking is the most popular and cost effective form of physical activity and many experts believe that increasing non-motorized transportation is the most practical and effective way to improve public fitness.

Economic Effects of Non-motorized Transportation

- Good walking/biking conditions allow consumers to save on vehicle expenses and decreases public costs for road and parking facilities, traffic congestion delay, crash risk, and environmental damages.
 - High parking and fuel costs add to the cost of driving: some drivers switch to walking or bicycling to avoid cost, particularly lower income drivers who tend to be more sensitive to out-of-pocket costs.
 - One study found that households in automobile-dependent communities devote 50% more to transportation, more than \$8,500 annually, than households in communities with more accessible land use and more multi-modal transportation systems, less than \$5,500 annually (McCann, 2000).
- Non-motorized facilities can increase nearby property values and help attract residents and businesses that value environmental quality, physical fitness and outdoor recreation.
 - A study by the Urban Land Institute found that homes in bicycle/pedestrian friendly, “New Urbanist” communities sold for an average of \$20,189 more than otherwise comparable homes in more conventional communities, an 11% increase in value (Eppli and Tu, 1999).
- Increased health costs due to physical inactivity
 - The California Department of Health Services calculated that the state’s residents spend \$24.6 billion annually on health care related to inactivity and poor diet.

Funding for Non-motorized Facilities Expansion

- Better counting of walking and bicycling trips will recognize more demand, and justify greater investments in non-motorized improvements.
 - Current transportation planning practices tend to undercount non-motorized modes by only counting the primary mode used for peak-hour zone-to-zone trips. For example the U.S. Census “Journey to Work” data only counts the primary mode used to commute to work. Short trips, non-commute trips, travel by children, and non-motorized links to transit or automobile trips are not represented.
- Given state and federal reluctance to fund non-motorized transportation facilities, it is likely that local transportation funding must be found to meet the financial needs of an expanded non-motorized transportation system for the region.
 - Local governments typically devote 5-15% of transportation budgets to non-motorized facilities; other levels of government (state and federal) provide much less support, typically 1-5%.
 - In California, less than 1% of federal transportation funds are spent on non-motorized facilities.
- Non-motorized facility improvements can be included in other budgets because they serve multiple purposes:
 - Walking and bicycling provides both transportation and recreation benefits, it therefore deserves funding from both.
 - Developer impact fees; as new neighborhoods are developed including bicycle and pedestrian facilities reduces the impacts on the local transportation system.
 - Transit; walk/bike accessibility to transit determines its effectiveness.

- Parking fees; increases in non-motorized travel decreases the need for automobile parking.
 - Safe Routes to Schools; providing safe accessible routes to schools decreases vehicle trips.
 - Public Health; safe and accessible bicycle and pedestrian facilities will help motivate more of the general public to get the minimum required physical activity to maintain good health.
- Programs to shift travel away from drive-alone may affect travel over a wide area at modest cost; for example SACOG's 511 traveler information and rideshare programs cost less than \$1million per year regionwide to foster carpooling, transit ridership, and bicycling in all corridors and areas.