



ONE SOLUTION, MANY BENEFITS

Given today's fiscal realities, a new mantra for local governance might be:

“Every project should solve multiple issues and avoid creating new ones.”

Transforming single-purpose roadways to Complete Streets fits well with this idea. Indeed, the Complete Streets concept emerged from the realization that roadway design meant to reduce traffic delays has had numerous unintended consequences with explicit or hidden costs. As the organization Project for Public Spaces⁸ puts it:

- » Congestion is rampant.
- » Americans die on our roads at the rate of almost 3,000 a month.
- » Parents are afraid to let their children walk down the streets.
- » New communities have no soul.
- » Obesity and its related diseases are rampant.
- » Dependence on imported oil makes us vulnerable to the economics of oil price and climate change is not being sufficiently addressed.
- » Furthermore, streets are no longer viewed as places, which is a huge loss given that streets can take up as much as one-third of a community's land.

With these concerns in mind, designing streets to serve all users, in a sustainable manner, can have wide-ranging, comprehensive benefits. example⁹

Economic Development

Complete Streets represent a tangible public investment and commitment to stronger commercial centers and urban neighborhoods. Their contribution to place-making is essential and profound (see “Complete Street Conversion Pays Off Big in Lancaster” on page 13 for example⁹). When combined with supportive zoning and increased land use efficiencies, Complete Streets create optimal conditions for infill development. Investment in Complete Streets is especially important for under-performing suburban corridors to redefine traditional auto dominance and catalyze economic growth.

Revitalizing commercial streets or raising residential property values through Complete Streets investments is a thoroughly proven strategy. Case studies can be found on the National Complete Streets Coalition website.¹⁰ San Diego's most successful recent project, the transformation of La Jolla Boulevard in the Bird Rock area of La Jolla, is highlighted at the end of this chapter.

Commercial streets revitalized by Complete Street treatments can be promoted through community events, walking maps, Bike Friendly Business District¹¹ campaigns (see photo), and other promotions.

Fiscal Savings

Complete Streets cost less to build and maintain, and create more value in the long run because they serve non-drivers as well as drivers. Some examples are as follows: (Note that savings in avoided fuel use, crashes, healthcare costs, and other externalities are not included.)

- » In De Pere, Wisconsin, the county highway department saved \$347,515 (16.5%) on construction of a major street by reducing the number of lanes from four to two, replacing two planned signals with roundabouts, and adding bicycle facilities.¹²
- » In Lee County Florida, County staff looking for Complete Street candidates, saved \$58.5 million by reprogramming five road widening projects approved in the 2035 Long Range Transportation Plan. Each was slated for four lanes, but was scaled back to two lanes with median and turn lanes, and cycling and walking facilities.¹³
- » A study prepared by the City of Orlando found that re-striping Edgewater Drive from 4 lanes to 2 lanes, a center turn lane, and bicycle lanes reduced the frequency of crashes involving injuries from every nine days to once every 30 days while the number of people walking and bicycling rose 23% and 30%, respectively.
- » In Vancouver, Washington, Fourth Plain Boulevard was converted from four lanes with poor provisions for people walking, biking or in wheelchairs into a street with two through lanes, a center turn lane, two bicycle lanes, curb ramps and improved sidewalks. After this inexpensive treatment, vehicle collisions dropped 52%, and the number of pedestrian crashes dropped from two per year to zero.
- » In 2012, the City of Carlsbad re-evaluated plans for a water line replacement and sidewalk construction project on Valley Street and Magnolia Avenue. To reduce vehicle speeds and avoid triggering expensive storm water treatment, staff found that narrowing the roadway from 40 to 34 feet would save the city over \$78,000-\$300,000 in road paving costs and increase safety for everyone.¹⁴ Future repaving costs would also be lower.



*A Bicycle Friendly Business in Denver, CO
Photo: Kate At Yr Own Risk via Flickr*

Health

By supporting active transportation, the Complete Streets approach is a key strategy to reduce chronic disease. According to the San Diego County Department of Health and Human Services, sedentary behavior is a primary or contributing cause of the top four chronic diseases in San Diego County: cancer, heart disease and stroke, type 2 diabetes, and pulmonary disease such as asthma. Considered together, these diseases cost \$4 billion in direct treatment expenditures in San Diego County in 2007,¹⁵ and a far greater total in indirect costs such as missed work days.

Complete Street Conversion Pays Off Big in Lancaster

The return on investment of a Complete Street treatment is dramatically illustrated by the nine-block redesign of 5-lane Lancaster Boulevard in Lancaster, CA. Prior to the project, the Boulevard was a blighted and crime-ridden business district. Within two years of the project's groundbreaking, the street and surrounding area were transformed into a vibrant regional destination for shopping, dining, entertainment and the arts. The economic development benefits during that period include: 1,100 construction jobs, 802 permanent commercial and retail jobs, 40 new businesses, and 807 new housing units constructed or rehabilitated. Project investments include \$41 million by the Lancaster Redevelopment Agency (\$11.1 million for the street improvements) and \$107 million in private investment. Total economic output to date is estimated at \$274 million with \$13.3 million in state and local revenues.



FROM POLICY TO PAVEMENT: IMPLEMENTING COMPLETE STREETS IN THE SAN DIEGO REGION

The California Department of Public Health¹⁶ estimated in 2011 that, for San Francisco, a shift in active transportation from a median of 4.4 to 22 minutes a day (2% to 15% mode share) would save \$1.4 to \$22 billion in annual health costs and add 9.5 months of life expectancy by reducing:

- » Heart disease, stroke and diabetes by 14%
- » Dementia and depression by 6-7%
- » Breast and colon cancer by 5%

Health Savings

Research examining the health benefits of bicycling and walking point to the same conclusion: investments in active transportation pay enormous dividends. The literature suggests the largest share of benefits comes from the well-being and health outcomes associated with being physically active.¹⁷

- » Lincoln, Nebraska: Every \$1 spent on bicycle and pedestrian trails (including construction, maintenance, equipment, and travel) yields \$2.94 in direct medical benefits.¹⁸
- » Portland, Oregon: Every \$1 invested in bicycling yields \$3.40 in health care cost savings. When the statistical value of lives is considered, as is done for the evaluation of highway safety improvement projects, every \$1 invested yields nearly \$100 in benefits.¹⁹
- » Kansas City: Every dollar invested in bicycle and pedestrian projects yields \$11.80 in benefits, the greatest portion of which is the perceived health and recreation value of those biking and walking.²⁰
- » A summary of several studies in the U.S. and Europe found that every dollar invested in bicycle networks yields at least \$4 to \$5 in benefits, mostly related to health and safety.²¹

Safe Transportation for All

In the San Diego region, up to one-third of residents in low-income neighborhoods lack access to a car. This includes children, elderly and disabled residents, and those who cannot afford or choose not to own a car. Wide, high-volume streets are also more prevalent in low-income neighborhoods.²² Not surprisingly, these residents suffer far higher rates of vehicle, bicycling, and walking injuries and fatalities. Thus, Complete Street treatments can often provide the greatest benefits in low-income neighborhoods.



Photo: Dan Burden via PedBike Image Library

Greater Accessibility

“Mobility” measures the ease of physical movement, whereas “accessibility” measures the ease of reaching goods, services, or activities. Too often, transportation planning focuses on increasing mobility – reducing vehicle congestion – when accessibility is what creates lasting economic value, quality of life, health, and equal opportunity. Complete Streets, combined with compact mixed uses, maximize accessibility for all members of society – and tax returns to the municipality – while reducing environmental impacts.



“Green” Trolley corridor, Photo: Jim Stone



E Street, Chula Vista – Before/After photo simulation by Urban Advantage courtesy of SANDAG²³

Green Street Opportunities

Rebuilding a street for all users offers an opportunity to incorporate porous pavements, bioswales,²⁴ street trees, and other techniques that reduce heat load and pollution, and capture and treat stormwater on-site, rather than relying on the expensive and sometimes inadequate conveyance system. Some built examples include as follows:²⁵

- » Seattle’s Natural Drainage Projects saved an average of \$329 per square foot.
- » Chicago’s Green Alleys Program was found to be 3 to 6 times more cost-effective handling storm water than conventional infrastructure.²⁶
- » Portland’s Green Streets Program found that 80-85% of peak storm water flows could be managed on-site by two “green streets” it had installed, and at far lower cost than a conventional system.²⁷

San Diego County’s Low Impact Development Handbook is an excellent general resource for incorporating green street features. The Handbook notes:

Traffic circles, chicanes, chokers, and center islands, offer the opportunity for stormwater management through the use of bio-retention areas or infiltration within these areas while providing pedestrian safety. (p. 53)

Traffic Capacity

An emerging literature of the past 20 years makes a compelling case that adding traffic capacity increases congestion (See Chapter 4) by attracting additional vehicle trips²⁸ and forcing more people to use their cars as roads become less safe and less pleasant for walking and bicycling. In short, widening roads may mean spinning our wheels and is not sustainable indefinitely. Conversely, street transformations such as Complete Street projects, road diets, and the conversion of signalized intersections to roundabouts have been found to allow the same traffic through-put, but at lower, safer, speeds, while providing new opportunities for walking, biking, and transit use (See box: Prospect Park West).



Photos: Ryan Snyder

Safety

The research of Dr. Eric Dumbaugh²⁹ and others,³⁰ shows that many of the engineering safety practices embodied in such authoritative sources as AASHTO's 2002 Roadside Design Guide are based on years of tradition, not necessarily strong evidence, and result in more, not fewer crashes than Complete Street designs. Urban standards that call for wide straight roads, wide lanes, infrequent intersections, and the removal of roadside objects, encourage speeding and result in a higher number of crashes.

A few transportation agencies are rethinking road standards in favor of Complete Street designs more in line with current safety evidence. New York City is leading the nation in innovative safety improvements for all street users. One result: bicycling trips increased 100% between 2007 and 2011. The city's focus on improved safety for bicyclists and pedestrians has especially benefited drivers. In 2011, the city recorded its lowest traffic fatality rate in 101 years of data collection, a 40% decrease since 2001.³¹

Noise

Studies show the human stress hormone cortisol rises with ambient noise.³² Noise from traffic travelling at 50 mph can be ten times greater than at 25 mph. Indeed, traffic noise is one of the greatest impacts of high-volume roads on adjacent land uses. The remarkable Complete Street conversion of La Jolla Boulevard in the San Diego neighborhood of Bird Rock, discussed below, reduced traffic noise from about 60-70 dB(A) to 40 dB(A)³³. Since noise is measured on a logarithmic scale, this represents at least a 100-fold decrease in noise level. This is one reason sidewalk cafes and strolling conversations are now a common sight in the area.

Prospect Park West: A Safer Street Serving More Trips

New York is leading the nation in innovative safety improvements for all street users. An example project is the Prospect Park West Traffic Calming/Bike Lane Project, which had the following benefits: (Photo: New York City Department of Transportation)

- Speeding decreased from 74% of drivers to 20%.
- Bicyclists riding on the sidewalk decreased from 46% to 3%.
- Weekday bicycle trips increased from 349 (June 2009) to 1,131 (August 2010).
- Children routinely accompany their parents on the bike lanes.
- Vehicle traffic peak volume was unchanged.
- Even with one traffic lane converted, counting cyclists, overall peak traffic increased.
- PM peak travel time through the corridor decreased by 4 seconds.
- Crashes were reduced 16%; injury crashes were reduced 62.5%.
- The pedestrian crossing distance, and thus traffic exposure, was reduced by half.



Case Study: La Jolla Boulevard– Bird Rock, San Diego

Each of the above benefits is reflected in the remaking of La Jolla Boulevard in the San Diego community of Bird Rock. For decades, this important street suffered from blight due to high speeds (38-42 mph), lack of safe pedestrian crossings, a shortage of parking, struggling businesses, and inadequate public space. After years of debate, several focus group sessions and various community workshops, the community settled on a plan to radically alter the boulevard using Complete Street concepts.

Changes included the development of five roundabouts, landscaped median islands 8–10 feet wide, pedestrian crossings and plazas, and diagonal parking on either side. Because of their efficiency at handling traffic, the roundabouts allowed the city to reduce the number of travel lanes from four to two. This reduces the pedestrian crossing distance substantially, resulting in less exposure to moving traffic.

The roundabouts reduced speeds to about 15-20 mph, substantially reducing both the number and severity of crashes. The reduction in lanes made space available for pedestrian seating and plazas, landscaped medians and other beautification treatments.

The accompanying reduction in traffic noise has been marked as one of the project's greatest benefits. Thriving businesses, sidewalk cafes, outdoor sales, and chance encounters with neighbors have made La Jolla Boulevard a community gathering place.

Landscaped roundabouts and medians combined with diagonal parking spaces create a village atmosphere that promotes more walking and better accommodates outdoor activities. The project triggered substantial revitalization of the adjacent businesses, and spurred a number of new developments, including a 139-unit condominium development, several new mixed use developments, and a major drugstore. Tax receipts from businesses spiked immediately after the reopening of the road.



Photos: San Diego Association of Governments (SANDAG)

Environment

The concept of sustainable communities is nearly meaningless without the provision of transportation choices beyond the personal automobile. Cities investing strategically in Complete Streets, such as Santa Monica, Vancouver, and Portland, find they can lower VMT and reduce criteria pollutants and greenhouse gas emissions from automobiles while providing a higher quality of life. Studies find that congestion, and emissions per vehicle trip and per capita, are lower in mixed use neighborhoods with many travel options.³⁴

These beneficial effects align with SANDAG's Sustainable Community Strategy (SCS) which projects that most new housing units built in the region through 2050 will be multi-family, from luxury townhomes to affordable apartments. Greater reliance on alternative transportation, especially for short trips, supports and reinforces compact multi-family development patterns that lower total energy use for both space heating and transportation. Since many new housing units will be in designated Smart Growth Areas, it is imperative that cities plan now for Complete Streets in these areas, lest residents find walking and biking conditions too unwelcoming to adopt the transit-friendly lifestyle they will be offered. As discussed above, Complete Streets can also be built as green streets, with attendant on-site and downstream environmental benefits.

Conclusions

1. Designing streets primarily to reduce traffic delay has had numerous unintended consequences. Complete Streets treatments offer a way to keep traffic moving while providing for other modes and meeting other community values.
2. For the municipality, Complete Streets investments can increase tax collections and jobs, reduce road building and maintenance costs, reduce emergency response costs, and improve air and water quality.
3. "Green street" techniques such as bioswales and porous pavements can reduce the costs of constructing roads, managing stormwater, irrigating landscaped areas, and heating and cooling.
4. For the individual, Complete Streets provide cost effective health and mental health benefits, reduce transportation costs, provide safe travel for non-drivers, reduce all types of crashes, reduce noise-related stress, and create more opportunities for local shopping and entertainment.
5. The health and safety benefits of Complete Streets are especially noteworthy. Every \$1 spent on walking and bicycling facilities can yield between \$5-\$100 in benefits, depending on which benefits are counted.
6. New York City is among the most ambitious US municipalities implementing walking, bicycling, and traffic safety improvements. In just over a decade, the city's crashes have dropped over 40%, to the lowest level in 100 years.