

SAFE FOR ALL



2011 Street Design Benchmark Study for the San Diego Region



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EXECUTIVE SUMMARY

San Diego policies at the regional, local and community level consistently cite walkability as a primary goal. Yet the San Diego region is largely a suburban patchwork of low-density, single-use developments connected by high-volume, high-speed roads designed to serve motor vehicles. The predictable outcome is that we must drive to do almost anything. Residents who can't or don't drive -- one-third of the population -- face disproportionate dangers, restricted travel options, or both.

Appropriate land use and improved public transit are important pieces of the solution, but they do not get at the fundamental question of whether the streets we build and maintain are safe for everyone to truly encourage walking and biking as an alternative to driving.

This report reveals what our cities are doing -- or not doing -- to make streets safer for all users. It also examines how cities around the country, under the banner of Complete Streets, are rethinking decades-old road standards to improve the safety and livability of their communities. The report provides a call to action for the region's 19 local governments to better align our street design practices with goals of walkable, bikeable communities.



Safe, walkable streets?

THE STATE OF BIKING AND WALKING

On an annual basis, approximately 65 pedestrians and nine bicyclists are killed in the San Diego region. About a thousand pedestrians and an equal number of bicyclists are injured. According to a 2011 national report, San Diego ranks fifth in most dangerous regions for walking. Fully 22% of traffic deaths here are pedestrians, almost double the national average of 12%. How did we get to this point?

Since the 1930s, roads in the U.S. have been designed for automobiles, with goals such as improving vehicular Level of Service (LOS) based on the Average Daily Traffic (ADT) volume. Graded on a scale of A through F depending on how efficiently traffic moves, this methodology ignores the effects on pedestrians, bicyclists, transit riders, and emissions of air pollutants and greenhouse gases.

These standards were introduced several decades ago during a time dominated by new road construction and a desire to move vehicles quickly. As planning goals changed and cities refocused attention on revitalizing urban areas, however, these standards did not change. As a result, our daily road improvements perpetuate vehicle speeds dangerous for everyone and discourage other modes of travel, even to the detriment of our personal health.

BEST PRACTICES - TAKING A NEW ROAD ON STREET DESIGN

Providing basic pedestrian infrastructure such as sidewalks and medians is critical to improving pedestrian safety. However, this is only a start. Cities taking a new road on street design use three common strategies:

- Revisions to roadway policies and standards to balance the needs of motorists with those of pedestrians, bicyclists, people with disabilities, and transit riders.
- Routinely considering all street users in street design decisions avoiding the usual traffic-flow-at-all-cost approach that ignores the local neighborhood context.
- Using innovative, low-cost solutions that improve safety for everyone, and implementing them during routine road maintenance projects such as roadway resurfacing or restriping of travel lanes.

SAN DIEGO'S CURRENT APPROACH

In San Diego, roads are still largely designed with a concentration on the automobile. Several challenges exist for cities to turn down a new road:

- Lack of strategic, comprehensive transportation plans with measurable objectives. Improvements for pedestrian and bicycle safety are outlined in separate plans and there is little accountability for implementation.
- A culture of risk avoidance. Traffic engineers are cautioned to avoid new techniques not spelled out in engineering standards for fear of liability and potential lawsuits.
- Perception that traffic congestion is a primary public concern. Surveys and meetings around the region show that residents' primary traffic concern is having safe streets, including accessible walking and bicycling routes for them and their children.

THE GOOD NEWS

Cities in the region have the tools for changing the way they build streets. Many have experimented with traffic calming devices, newer crosswalk designs, and other techniques to improve safety around schools and in residential neighborhoods. Developing strategies to expand these individual projects, initiated by citizen complaints, into a proactive, comprehensive plan will make providing Complete Streets the new way of doing business.

RECOMMENDATIONS FOR CHANGE

Seven recommendations for local jurisdictions are outlined in the report based on the best practices cited and interviews with local staff at each city. In general, the recommendations emphasize the need to think comprehensively, strategically and consistently about how design decisions affect all users of the street. Specific tools to aid in this process are also recommended. Recommendations are also offered for the San Diego Association of Governments as it adopts the 2011 Regional Transportation Plan and distributes local transportation funds.

2011 Street Design Benchmark Study for the San Diego Region

STUCK IN TRAFFIC

Like much of the United States, the San Diego region is largely a suburban patchwork of low-density, single-use developments connected by high-volume, high-speed roads designed to serve motor vehicles. The predictable outcome is that we must drive to do almost anything. Unfortunately, our planet, our health, our economy, and basic concerns about fairness suggest we cannot sustain this pattern indefinitely.

In San Diego, 46% of greenhouse gas emissions (GHGs) are emitted by on-road cars and trucks.¹ To reduce this emission source, California Senate Bill 375 (2008) requires each metropolitan planning organization (including SANDAG, the San Diego Association of Governments) to tie together land use, housing, and the Regional Transportation Plan into a new Sustainable Community Strategy (SCS). More specifically, the law requires each Metropolitan Planning Agency (MPO) to reduce GHGs to state assigned targets and outline within its SCS how future transportation infrastructure investments will help the region meet the established targets. SANDAG's state assigned targets are a 7% reduction in GHGs by 2020 and a 13% reduction by 2035.

The new legislation provides San Diego and SANDAG the chance to be a statewide leader in adopting safe street policies and healthier community design practices as a centerpiece strategy to lower GHGs and VMT. This report proposes that a new approach to road design be a critical piece to this strategy. Appropriate land use and improved public transit are just part of the solution. The streets we're building and maintaining must be safe for all users to truly encourage walking and biking as an alternative to driving. Other regions and cities around the state and country are implementing comprehensive change and demonstrating that it's possible to rethink street design and provide safer conditions for all streets users even while boosting the economic development, health, and quality of life of our communities.

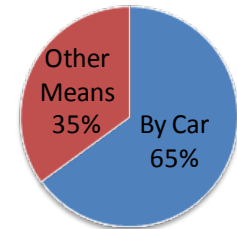
SAN DIEGANS SUPPORT BOLD ACTION

San Diegans are ready for a new transportation paradigm. In a 2010 survey commissioned by the San Diego Foundation,² 72% of respondents said the region should take a leadership position in reducing greenhouse gases. Seventy percent supported SB375 implementation, and 79% supported making neighborhoods more walkable as a greenhouse gas solution.

THE STATE OF WALKING AND BIKING IN THE SAN DIEGO REGION

What's it like to walk or bike in San Diego? Anecdotally, residents often cite dangerous streets and fast moving cars as a reason *not* to bicycle or walk. Statistics suggest that San Diego is one of the least safe cities for walking.³

Transportation Mode for Trips Less than One Mile in Metropolitan Areas



Source: National Complete Streets Coalition, Gas Prices Fact Sheet



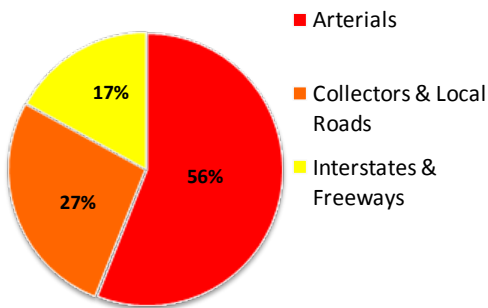
The car is invited to the party but he never wants to leave. He drinks a lot and coughs a lot and has an exaggerated sense of his own importance. He always wants more space and is a very demanding person.

— Jaime Lerner, Former Mayor, Curitiba Brazil, International Advocate for Integrated Transit Systems



Every mile traveled by bicycle instead of automobile saves one pound of Green House Gas emissions.

Pedestrian Fatalities in Urban Areas by Road Type (2007-2008)



Transportation for America and Surface Transportation Policy Partnership, 2009, *Dangerous by Design*

- Around 4% of commute trips in the region are made by walking⁴, and about 3% are by bicycle.⁵ Approximately three percent of commute trips are taken with public transportation.⁶
- The percentage of total San Diego area traffic deaths in 2010 that were pedestrians was 22%, ranked 5th in the nation.⁷
- In the San Diego region, 63 pedestrians were killed and 998 were injured in 2008; 7 bicyclists were killed and 959 were injured.⁸
- SANDAG's 2050 Regional Growth Forecast estimates a regional population increase from 3.1 million to 4.4 million by 2050.⁹
- To accommodate this growth, SANDAG estimates 97% and 42% of new housing and jobs, respectively, will occur in compact "smart growth opportunity areas". Motivating people to take to the streets either by transit, bike, or on foot will depend largely on the region's success in designing streets to invite them to come for the ride.

TAKING A NEW ROAD ON STREET DESIGN

Roads in the U.S. have historically been designed for automobiles, with goals such as improving vehicular Level of Service (LOS) based on the Average Daily Traffic (ADT) volume. Graded on a scale of A through F depending on how efficiently traffic moves, this methodology disregards pedestrians, bicyclists, transit riders, and emissions of air pollutants and greenhouse gases. The functional street classification system typically used by cities as a backbone to street design (i.e. arterials, urban majors, majors, etc.), further emphasizes auto efficiency and ignores factors like bicyclists and adjacent land uses.

Tradeoffs Between Traffic Flow and Safety

Local transportation policies should reflect the perspective of all users within the context of a community's economic, environmental, and social values. Unfortunately, conventional traffic Level of Service (LOS) measures inherently value traffic delay reduction over every other consideration:

1. **Cost:** Because LOS policies influence the size and type of transportation infrastructure investment, maintaining a higher LOS may be an inefficient use of public funds. Balancing LOS with other considerations can reduce costs. This is particularly timely for cities struggling with shrinking infrastructure budgets.
2. **Safety:** Higher LOS thresholds are associated with higher vehicle speeds for peak and especially non-peak hours, which increase the likelihood of fatal collisions and discourages bicycling and walking. Traditional LOS measures driver comfort and convenience but often results in negative impacts to pedestrians and bicyclists including increased crossing distances at ever-wider intersections and decreased safety at mid-block crossings due to substantial road width.
3. **Physical Space:** The goal of an efficient transportation network is to increase the capacity for person-trips, not just vehicle-trips. Current LOS policies focus only on moving vehicles through the network

Source: *Transportation Analysis gets a Failing Grade when it Comes to Climate Change and Smart Growth*, Fehr and Peers, 2008

A particular problem is the tendency to design roads for speeds that are not only dangerous for everyone but discourage anyone not in a car. This is especially true for large, high-volume “arterial” roads linking neighborhoods or funneling local traffic to and from freeways. Yet, these roads typically attract more walkers and bicyclists because of their physical connection to the rest of the street system and because they serve major transit lines. In urban areas, 56% of the 4,378¹⁰ U.S. pedestrian fatalities in 2008 occurred on arterial roadways.

Research shows that a pedestrian’s chance of survival when hit by a vehicle traveling 40 mph is 15%, at 30 mph it’s 55%, and at 20 mph, it’s 95%.¹¹ The adage “speed kills” is truer than most people suspect. Unfortunately, achieving safe roadway speeds is not simply a matter of posting lower speed limits. The only effective way to moderate speeds is to intentionally design roadways to achieve this goal. Retrofitting residential streets for lower speeds is called “traffic calming”. A more limited menu of treatments is also available for arterial streets, and is often referred to as “traffic taming”.

A recent safety review from the Federal Highway Administration (FHWA) found that designing the street with pedestrians in mind—sidewalks, raised medians, turning access controls, better bus stop placement, better lighting, traffic taming measures, and treatments for disabled travelers—all improve pedestrian, bicyclist and motorist safety.¹² Findings included the following:

- Providing sidewalks reduces pedestrian crashes by 88%,
- Medians reduce pedestrian crashes 40%, and
- Road diets (reducing the number or width of lanes) reduce pedestrian crashes 29%.¹³

As safety improves, the one-third of the population that doesn’t drive, and therefore depends on other modes, is far better served.

DESIGNING FOR CARS OR PEOPLE? A CHANGING PARADIGM

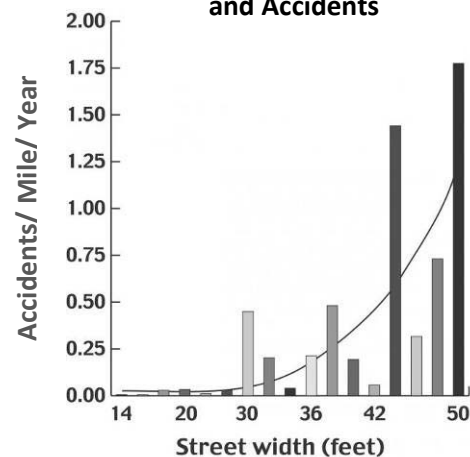
Providing basic pedestrian infrastructure such as sidewalks and medians is critical to improving pedestrian safety. However, this is only a start. Providing safe accommodations for all users of the street – providing a “Complete Street” -- requires rethinking our priorities and consistently and strategically funding street treatments that improve road safety for all.

In many U.S. cities, traffic planners are doing exactly that, replacing rigid street design formulas based on a street’s classification with context-sensitive design solutions that reflect local needs and priorities.

CALIFORNIA GETS INTO THE (COMPLETE STREETS) ACT

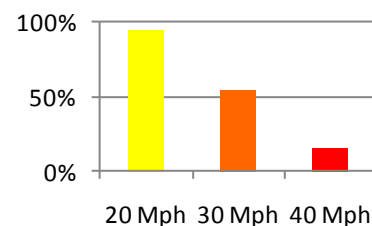
In September 2008, then-Governor Arnold Schwarzenegger signed into law Assembly Bill 1358, the Complete Streets Act. As of January 1, 2011, the law

Residential Street Width and Accidents



Swift, Painter, Goldstein, 2006, Residential Street Typology and Injury Accident Frequency

Pedestrian Survival Rate by Vehicle Speed



Transportation for America and Surface Transportation Policy Partnership, 2009, Dangerous by Design,

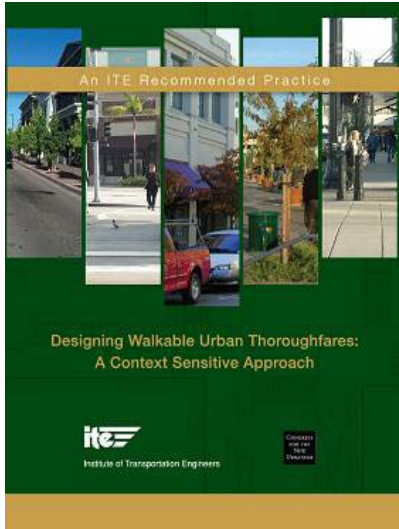
Complete Streets are designed and operated to enable safe and efficient access for all legal users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to move safely along and across corridors. This applies in rural, suburban, and urban areas.

- Definition of Complete Streets, Caltrans Deputy Directive 64-R1 signed October 2, 2008

requires cities and counties to ensure that updated land use plans, known as “general plans,” account for the needs of all roadway users. A prior bill, Senate Bill 97 (2007) directed that implementation guidelines for the state’s keystone environmental law, the California Environmental Quality Act (CEQA), should be amended to include analysis and mitigation of greenhouse gas emissions, as well as potential negative impacts on bicyclists and pedestrians. Similarly, Caltrans produced the *Complete Streets Action Plan* and *Smart Mobility 2010* guidelines that echo the emphasis on accommodating all modes safely.

Agencies and professional organizations around the country are also reflecting this paradigm shift by issuing so-called “multi-modal” street design tools in both federal standards and professionally recommended guidelines. Some examples include:

- National standards from the American Association of State Highway and Transportation Officials (AASHTO) have been changed to reflect a multimodal approach in the traffic engineering “bible” known as the [Policy on Geometric Design of Highways and Streets](#).
- The Federal Highway Administration has promoted speed reduction as key congestion relief technique as part of the federal Congestion Mitigation and Air Quality program (CMAQ).
- The Institute of Traffic Engineers (ITE), in partnership with the Congress for New Urbanism (CNU) published [Designing Walkable Urban Thoroughfares: A Context Sensitive Approach](#).



In its 2006 publication, the ITE and CNU partnered together to target thoroughfares as priority streets to redesign and improve walkability.

COPENHAGEN: FROM “CARS ARE US” TO MULTI-MODAL CITY

In 1962 the City of Copenhagen, long dominated by automobile traffic, began to experiment with the notion that the way people move about mostly reflects what transportation facilities they are provided – a radical idea at the time. City leaders asked the question: What if we built our transportation system around the needs of the pedestrian first, then the bicyclist, then the automobile? Urban designers and transportation engineers began to experiment with this concept--one block at a time. Success bred further success.



Today Copenhagen commuters travel far differently -- 4% walking, 37% bicycle, 28% transit, and 31% auto. Although reducing GHG was never the goal -- the primary objective was improving pedestrian safety and city livability -- Copenhagen now boasts the lowest carbon footprint of any large city in the world.

BEST PRACTICES – CITIES RETHINKING STREET DESIGN

Cities all over the U.S. have recognized that streets can play a much larger role than simply moving vehicles; in these places, city leaders are re-evaluating their entire approach to street design. This section highlights some of the current best street design practices in the U.S. and the San Diego region.

New York and Long Beach – Integration and Innovation

New York, NY

While many U.S. cities try to encourage downtown pedestrian traffic, the City of New York has long had more pedestrians than it can comfortably handle. To address this challenge, the New York Department of Transportation in 2006 hired Copenhagen’s visionary urban designer Jan Gehl to evaluate the potential for enhancing New York’s public spaces, including its streets. His report, *World Class Streets: Remaking New York City’s Public Realm*, along with two previous city documents, *PlaNYC* (2007) and the *Sustainable Streets Strategic Plan* (2008) laid out a vision for a new approach.

The 2009 [NYC Street Design Manual](#), championed by Mayor Michael Bloomberg, established a dramatic shift in the way the city designed its streets. The Manual contains many best practices, but one noteworthy element is the willingness to test new street design techniques that have been successful elsewhere.

Invitation to Innovation

In a groundbreaking departure from the way traffic engineers typically operate, the Street Design Manual explicitly encourages experimentation and borrowing of best practices from other cities in the U.S. and around the world. This is reflected in the manual’s street treatment ‘toolbox,’ which tags each treatment with one of three labels:

- *Wide*: In wide use throughout New York City
- *Limited*: In limited use/contingent on site-specific conditions
- *Pilot*: Currently in limited use, but employed successfully in other US and international cities.

The ‘pilot’ tag allows temporary roadway changes that can be easily evaluated before being installed permanently. For example, street spaces were “re-purposed” using rubber curbs, or delimited only by paint or with movable cement planters. In this way, the city discovered pent-up demand for both pedestrian and bicycle facilities and public gathering spaces as residents flocked to the new “pilot” facilities.

The NYC Street Design Manual ‘builds on the experience of innovation in street design, materials, and lighting that has developed around the world. It is designed to be a flexible document that will change and grow, incorporating new treatments as appropriate after testing.’

– NYC Street Design Manual

Best Practice #1 *Innovation*

Encourage the use of innovative street design techniques on a pilot basis. Evaluate, adjust and actively build upon successful pilot projects.





Cycle tracks in New York City are one example of pilot projects introduced.



Times Square was reintroduced as a pedestrian mall.

Examples of the more innovative and highly successful improvements include the conversion of Times Square into a public plaza, the transformation of an unused freight rail line into a landscaped pedestrian pathway, the installation of several protected “cycle tracks,” and two Bus Rapid Transit (BRT) lanes painted red (with more under development). The city is also studying over 40 corridors for future BRT service. Fueling the new spirit was the strong support of Mayor Bloomberg and the city’s Traffic Commissioner Janette Sadik-Kahn.

Long Beach, CA

The City of Long Beach wants to be one of the nation’s top bicycling cities. The goal is driving innovative solutions to promote safe bicycling and walking throughout the City. Improvements to date include a bevy of new bicycling facilities such as cycle tracks, sharrows with unique green striping, [Southern California’s first bicycle boulevard](#)¹⁴, and hundreds of additional bike racks. These are coupled with a newly revised Bicycle Plan to outline an ambitious network of new facilities throughout the City.

According to Charlie Gandy, the City’s Mobility Coordinator, the City fully expects the changes to be a transformational experience for Long Beach residents. The City is reallocating the space in the street specifically for residents’ benefit in lieu of people who simply drive through the area. As a result, the City is one of the lead cities in the nation using an innovative approach to make streets safer for everyone.

A World of Innovative Bike Design

The Urban Bikeway Design Guide recently released by the National Association of City Transportation Officials (NACTO) highlights experience with innovative bicycle facilities from cities around the world. Most of the treatments cited are not directly referenced in traditional design standards such as the AASHTO Guide to Bikeway Facilities or MUTCD although many of these elements are found within the documents. The purpose of publishing the Guide is to showcase successful efforts piloted by cities around the world, but not yet developed as roadway standards.

Painted bike lane, Chicago, IL
NACTO Urban Bikeway Design Guide



Charlotte & Sacramento— Designing Streets to Match Surrounding Land Uses

Charlotte, NC

The City of Charlotte, NC was one of the first cities in the U.S. to adopt VMT reduction goals and to promote Complete Streets. The [Charlotte Urban Street Design Guidelines](#) (2007) ‘prioritize street balance and maintain safety for all.’¹⁵ The Guidelines respond to the city’s Transportation Action Plan (2006) which integrates into one document land use and transportation goals — including automobile, transit, biking, and walking. Two basic issues drove development of the Guidelines: (a) Charlotte’s need to better plan for continued growth and development, and (b) Charlotte residents’ desire for better streets.¹⁶ Thanks to an inclusive public process and leadership from city officials, the city completed more than 100 miles of new sidewalks, 65 miles of newly striped bike lanes, and at least nine road diets within five years of the Guidelines’ approval.¹⁷

Two key elements of the Guidelines are highlighted here as best practices:

- (a) The introduction of new context-sensitive street types to better integrate land use and transportation, and
- (b) The establishment of a 6-step evaluation process for all proposed street construction projects.

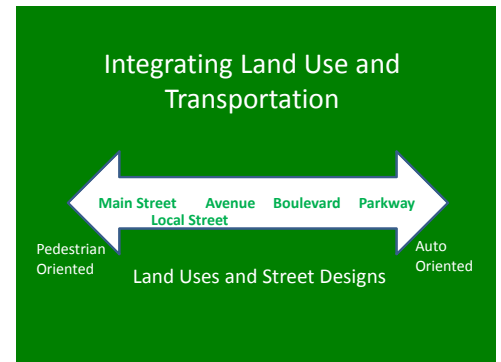
Context Sensitive Design

The Design Guidelines address all travel modes while emphasizing land use context, street function, and allocation among competing uses for existing right-of-way. This emphasis is reflected in the five new street types, ranging from most pedestrian-friendly to most auto-oriented: Main Streets, Local Streets, Avenues, Boulevards, and Parkways.



Best Practice #2 Design Flexibility

Develop street typologies that reflect surrounding land uses.



City of Charlotte, NC, Continuum of street typologies, Urban Street Design Guidelines, 2007

East Boulevard was a four-lane, undivided street carrying more than 20,000 vehicles a day through the heart of one of Charlotte’s historic neighborhoods. Through a road diet, the street was successfully converted to three lanes with bicycle lanes and pedestrian refuge islands.



A road diet on this street in Charlotte changed a four-lane road to two lanes, narrowed the left-over travel lanes from 12 feet to 10 feet, and added wider sidewalks and bike lanes – all within the existing right of way.

Best Practice #3 *Democratize the Street*

De-emphasize traffic-flow-at-all-cost and instead establish a decision-making process that considers adjacent land uses and all users of the street.

Once a street is classified as a certain type, subsequent street design and land use decisions are coordinated accordingly. Mark Cole, Charlotte's Design Section Manager explains, 'What helps with our approach is recognizing that not all streets are the same. Some are more auto-oriented than others. The street types developed have been helpful to clarify decision making points'.. Emphasizing this point, the street types have also been integrated into a broad-based evaluation process described below and a multi-modal Level of Service (traffic flow planning) system (see box).

Six-Step Evaluation Process

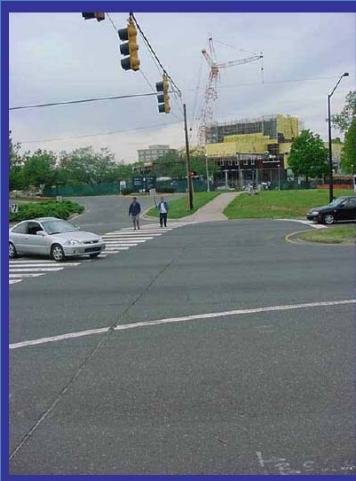
Accompanying the street classification system is a national model decision process. With a goal to avoid a 'one-size-fits-all' approach and to acknowledge each project's context, the process analyzes the land use and urban design context and current deficiencies before considering the street's original classification. This is contrary to U.S. traffic planning practice, where a street classification based on traffic volume is assigned at the outside and limits all subsequent design options. Again, according to Mr. Cole, 'Most of our changes are completed through our street retrofit program, i.e. existing streets with a limited right of way. The six-step process has been an enormous help in adequately determining a tradeoff process that helps decide the ultimate result'. The six steps are:

- (1) Define the existing and future land use and urban design context,
- (2) Define the existing and future transportation context,
- (3) Identify deficiencies (congestion, inadequate disability access, etc.),
- (4) Describe future objectives,
- (5) Recommend street classification and test initial cross-section, and
- (6) Describe trade-offs and select cross-section (width, number of lanes, etc.).

Using this process, the city discovered that many improvements could be completed in the course of routine street resurfacing. The key has been to integrate **all users** into **all decisions**.

Using Multi-Modal Level of Service (Traffic Flow) Standards

The Technical Index to Charlotte's [Transportation Action Plan](#) includes the city's first effort to evaluate signalized intersections from the perspective of every user – motorist, bicyclist, pedestrian, etc. Importantly, the city does *not* try to accommodate all users equally on every street. Instead, the objective for automobiles vs. pedestrians and bikes changes according to the street classification and adjacent land uses. How have these standards changed the city's approach to intersection design? 'Whereas in the past staff would have looked at high congestion or accident history as reasons for change, they now also include consideration of how well the intersection functions for bicycles and pedestrians', says Mark Cole.



At left, an intersection before and after implementation of a multi-modal LOS analysis. Improvements include revised striping to shorten pedestrian crossing distance and installation of a count down timer and median.

Sacramento

Similar to Charlotte, the City of Sacramento developed new street types and allowed greater flexibility in the design process to be more responsive to local needs. The City had already adopted pedestrian and bicycle design guidelines, but the street typologies – adopted in the [General Plan](#) -- emphasized the City's desire to include these facilities as part of street design generally. This has proved especially helpful in communicating street construction requirements to developers.

Another key component of the updated General Plan was the inclusion of 'exemptions' from automobile LOS standards for certain streets, for example, streets located within a ¼ mile of transit and for a number of specific roadway segments.

Street Typology System Integrating Street Function and Type						
Functional Class	Street Type					
	Residential Street	Main Street	Mixed-Use Street	Commercial Street	Industrial Street	Boulevard
Major Arterial				0	0	0
Minor Arterial	0	0	0	0	0	0
Major Collector	0	0	0	0	0	0
Minor Collector	0	0	0	0	0	
Local	0	0	0		0	

Sacramento, CA, General Plan, Mobility Element, 2009

The exemptions allowed the City to ensure that these streets could prioritize bicycle and pedestrian movement over vehicles. For example, Folsom Avenue, a three-lane arterial between a light rail station and Sacramento State University, is currently being rebuilt with these priorities in mind. Although traffic demand suggests an additional lane be considered, the City instead is accepting less vehicle access, removing one travel lane and a turn lane, while adding wider sidewalks, on-street parking, and bicycle lanes.¹⁸

Seattle, Washington –

Implementing Complete Street Goals in All Decisions

In 2006, Seattle voters approved a nine-year \$365 million transportation funding levy ('Bridging the Gap') to reduce its backlog of transportation maintenance projects and to revamp streets throughout the city. Shortly thereafter, the city council approved a [Complete Streets Ordinance](#). And like Charlotte, these two efforts came on the heels of the city's creation and adoption of a [Transportation Strategic Plan](#) to outline 'specific strategies, projects, and programs that implement the broader city-wide goals and policies for transportation in Seattle.'

The result? Legislative authority and political support to ensure that decisions about project design were made with the needs of all modes in mind. Today, the Seattle Department of Transportation (SDOT) requires all major road maintenance projects to undergo a thorough Complete Streets review, using a standard [Complete Streets checklist](#). It prompts city staff to simultaneously consider multiple components: opportunities for natural drainage, improvement of transit access and efficiency, feasibility of a road diet, and improvement of routes to neighborhood schools, among other elements. When repaving a street for example, staff will consider a new configuration in the existing right-of-way that creates space for bicyclists or improves traffic flow for cars.

SDOT set clear goals for change: 117 blocks of new sidewalks, restriping 5,000 crosswalks, planting 8,000 new street trees, and developing a pedestrian master plan. Annual progress toward meeting these goals is provided on the city's website.

Best Practice #4

Continually infuse street design policies into the daily decisions of all city departments making Complete Streets everyone's mission.

In 2010, successes included 15 new blocks of sidewalks, 42 crossing improvements as part of pedestrian master plan implementation, 20 miles of newly striped bike lanes and sharrows (share-the-road arrows), and 350 new bike parking spaces to keep up with growing demand. In addition, as of 2010, a total of 24 road diet (lane reduction) projects had also been implemented to narrow travel lanes and enable installation of bike lanes.¹⁹

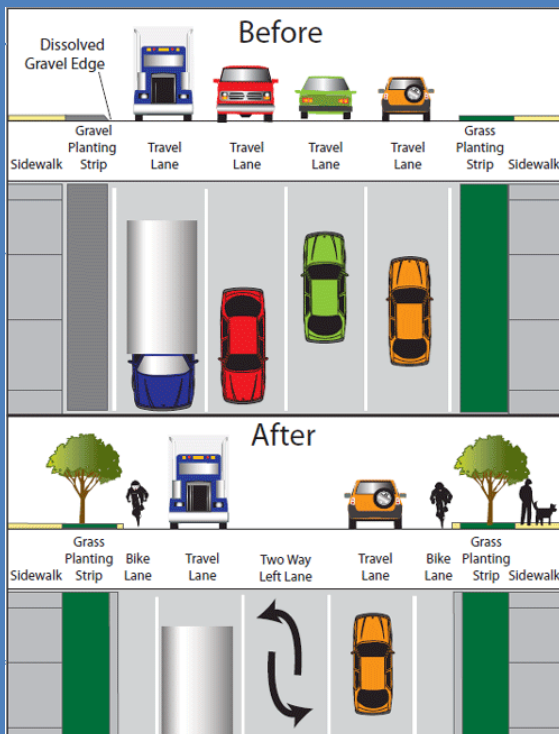
Seattle’s experience demonstrates the benefits of infusing Complete Streets principles into all guiding documents—the transportation strategic plan, the transit plan, and the pedestrian and bicycle master plans, among others—as defined in the ordinance, so that these practices become standard operating procedure.



Sharrow installation by SDOT

South Columbian Way Goes on a (Road) Diet

In 2010, SDOT reconfigured South Columbian Way, a four-lane arterial, as part of its Bridging the Gap program. The project included the planting of nearly 100 new trees lining the street, new curb ramps, new bike lanes, a new two-way center turn-lane, and a new dedicated right-turn lane into the Seattle VA Medical Center. The net effect was improved motor vehicle safety and access, pedestrian access and bicycle usage. Project components were identified through the city’s routine street resurfacing program.



Best Practice #5 Monitor Progress

Issue an annual Mobility Report Card to measure and report progress implementing Complete Streets.

Redmond, WA - Monitoring Progress and Success

Many cities have incorporated ongoing performance and evaluation programs to monitor success over time as part of their new approach to street design. In 2005, the suburban City of Redmond, Washington adopted a comprehensive [Transportation Master Plan](#) (TMP) to support development of the land uses envisioned by the Comprehensive Plan. The effort relied on substantial public input to outline plan goals.

Once the plan was adopted, the city also established a system of annual monitoring and performance reporting to enable the public and the city's elected officials to gauge how effective the transportation programs had been. The plan also requires a Five Year Transportation Status Report which is to be prepared just prior to TMP update.

Annual Mobility Report Card

The yearly performance of the TMP is summarized in a [Mobility Report Card](#). All of the tracking measures, including average daily transit ridership, average daily vehicle miles of travel, average daily traffic, annual traffic accidents, annual bicycle and pedestrian accidents, are predetermined for ease of comparison over multi-year time horizons. The Mobility Report Card also assesses progress on meeting Level of Service objectives for transit, vehicular traffic, bicycle system, pedestrian system and mode split.

According to Joel Pfundt, a Principal Planner, the greatest value of both the TMP and Report Card is how they clarify the need to integrate policies with implementation tasks.²⁰ The TMP serves as a 'crosswalk' to existing policies. Knowing the City is accountable for reporting progress each year in the Report Card, Complete Street goals are maximized with every task. Another



A Vision for Better Streets

As in Redmond, the New York City DOT developed a comprehensive transportation plan and monitoring program to chart progress towards a revised street system. The 2008 Sustainable Streets Strategic Plan outlines broad policies supported by clear, measureable actions in seven key areas including safety, mobility, world class streets, infrastructure, greening, and global leadership. Each year the NYDOT issues a progress report on the Sustainable Streets Plan filled with quantitative measures and commentary on plan accomplishments.

Safety
Mobility
World Class Streets
Infrastructure
Greening
Global Leadership
Customer Service

Sustainable Streets 2009 Progress Report

Commuter cycling is up over 35% from 2007-2008, thanks in part to innovative designs that improve cyclists' sense of safety.

STREET DESIGN TO MAXIMIZE PUBLIC SAFETY

- **ADAPTIVE STREET DESIGN** - NYDOT has implemented adaptive street design on 100 miles of streets, including 100 miles of streets with adaptive street design for transit, bicycle, and pedestrian use.
- **ADAPTIVE STREET DESIGN** - NYDOT has implemented adaptive street design on 100 miles of streets, including 100 miles of streets with adaptive street design for transit, bicycle, and pedestrian use.
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IMPLEMENTATION

- **ADAPTIVE STREET DESIGN** - NYDOT has implemented adaptive street design on 100 miles of streets, including 100 miles of streets with adaptive street design for transit, bicycle, and pedestrian use.
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CHANGING PUBLIC BEHAVIOR

- **ADAPTIVE STREET DESIGN** - NYDOT has implemented adaptive street design on 100 miles of streets, including 100 miles of streets with adaptive street design for transit, bicycle, and pedestrian use.
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contribution of the Report Card is its accessibility and transparency. Citizens can easily see the progress made in transforming the City's street system.

La Mesa, CA –

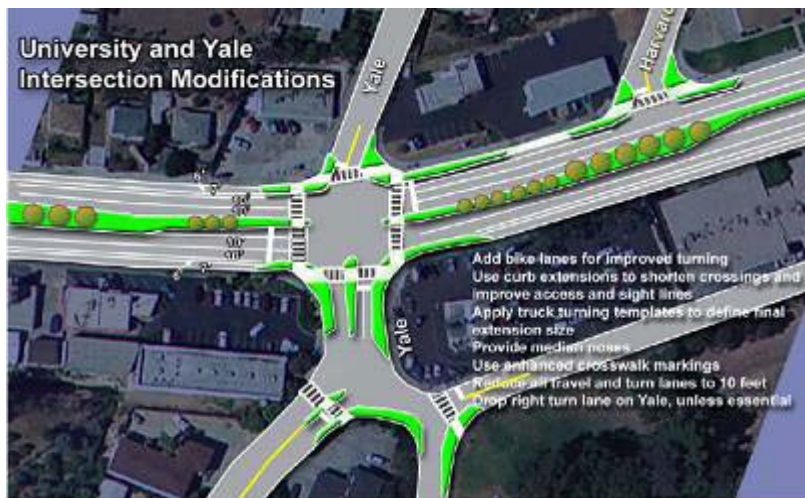
Integrating Bicycling/Walking Safety and Design

The City of La Mesa Walkability Plan provides an excellent example of what can be accomplished by a pedestrian master plan in the San Diego Region. The purpose of the plan is to create a broad community-based vision and action plan for a more walkable community. Although the term Complete Streets is not used in the document, It considers the need to reconfigure entire streets to improve safety and better serve pedestrians and bike riders alike. The focus is not exclusively on sidewalks or places where pedestrians might come into conflict with cars. Rather it reflects a comprehensive look at how streets can be designed to accommodate all users.

The plan also provides important street design guidance for the city, outlining street types, recommended lane widths, the establishment of a retrofit program, illustrated cross-sections and an extensive traffic calming toolbox. Because of this detail, the Walkability Plan is a key document informing the City's General Plan Mobility Element Update (currently in process) and as a basis for updated street design guidelines.

Best Practice #6

Integrate bicycles and pedestrians into routine road design considerations.



A modification at the University and Yale intersection includes recommendations to:

- Add bike lanes,
- Use curb extensions to shorten crossings and improve access, and
- Reduce all travel and turn lanes to 10 feet.

Typical recommendations include the use of road diets, lane width reductions, and reduced curb radii to slow traffic speeds and create a safer environment for pedestrians. All recommendations are tailored to individual circumstances.

Similar to the Charlotte and Sacramento examples mentioned above, La Mesa's Walkability Plan also introduces new context-sensitive street categories as a framework for the recommended improvements. These include Hillside Local Streets, Non-Hillside Local Streets, Downtown Streets, University Avenue, El Cajon Boulevard, and Fletcher Parkway. In this way, the Plan serves as the City's *de facto* street design manual.

Best Practice #7 Reallocate Underused Pavement

Use existing right of way to implement multiple features that improve mobility and pedestrian and bicycle safety.

Encinitas and National City – Using Less is More Philosophy with Road Diets

Encinitas and National City are two jurisdictions that have made use of road diets, one of the most effective and cost-effective tools within the Complete Streets toolbox. As discussed elsewhere in this report, road diets can increase mobility and safety for multiple users of the street. They can be inexpensively installed in the course of routine street resurfacing, and without changing the existing right of way. The typical road diet converts a four-lane road carrying 12-18,000 auto trips per day into a two-lane road with center turn-lane, although roads carrying as much as 30,000 daily trips have also been successfully converted.²¹ ‘Leftover’ right of way can be used to stripe bicycle lanes, widen sidewalks, include planting strips, or any treatment prioritized by the city or citizens.

According to one city official interviewed by WalkSanDiego, ‘Using the additional space provided through a road diet is a tradeoff among multiple decisions. Reducing travel lane widths can become a popular option if bicycle lanes are valued and the right of way width is limited.’ Before and after traffic analyses show that road volume is not impacted. In fact, in many cases, volumes increase. This is because drivers are no longer able to weave between lanes (which reduces road capacity) in an effort to maintain high speeds.²² Road diets have also been shown to reduce pedestrian crashes by 29%.²³

By reducing the number of travel lanes and reallocating the excess right-of-way for other uses, road diets have numerous benefits:

- Additional space for new bike lanes, on-street parking, landscaping, and/or sidewalks—even dedicated transit lanes,
- Improved safety due to reduced vehicle speeds and less weaving,
- Improved traffic flow for multiple users, and
- Fewer collisions and injuries.

Encinitas, CA

In 2010, the City of Encinitas approved a road diet along North Coast Highway 101 as part of its Coast Highway Streetscape project. Road diets in the 2.5-mile project resulted through the City’s public workshop process in order to make room for other benefits within the existing right-of-way. Other Complete Street tools recommended for the project are the inclusion of HAWK pedestrian crossing signals, expanded sidewalks, additional bike lanes, curb extensions, the restoration of tree canopy planted along the roadway and in the center median, and a total of five roundabouts. Other North County coastal cities are also considering improvements.



A road diet is planned for this stretch of Coast Highway 101 in Encinitas and will result in new bike lanes, sidewalks and on-street parking.



High intensity Activated crosswalk – HAWK – signals have been proven to dramatically reduce pedestrian crashes at mid-block crossings and intersections. They are included in the 2011 Manual on Uniform Traffic Control Devices (MUTCD).

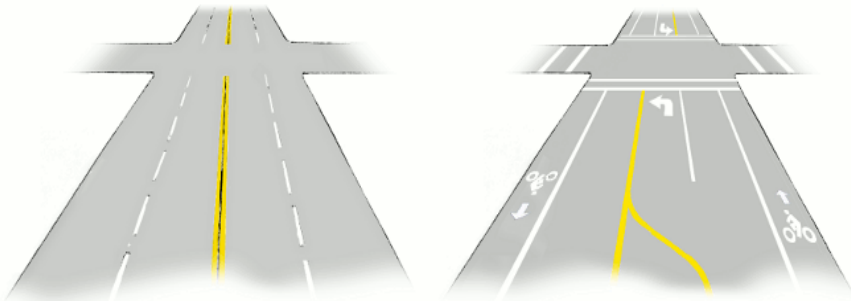
National City, CA

In 2010, National City completed a road diet (four lanes to three) on East 8th Street from Palm Avenue to Harbison Avenue using funds from the City’s Street Resurfacing Capital Improvements Program. This project is part of the City’s plan to implement a road diet on the entire 0.8-mile 8th Street corridor. In addition, the City is looking for funds to install raised pedestrian refuge islands and advanced warning beacons for mid-block crosswalks to further enhance pedestrian safety along this corridor.

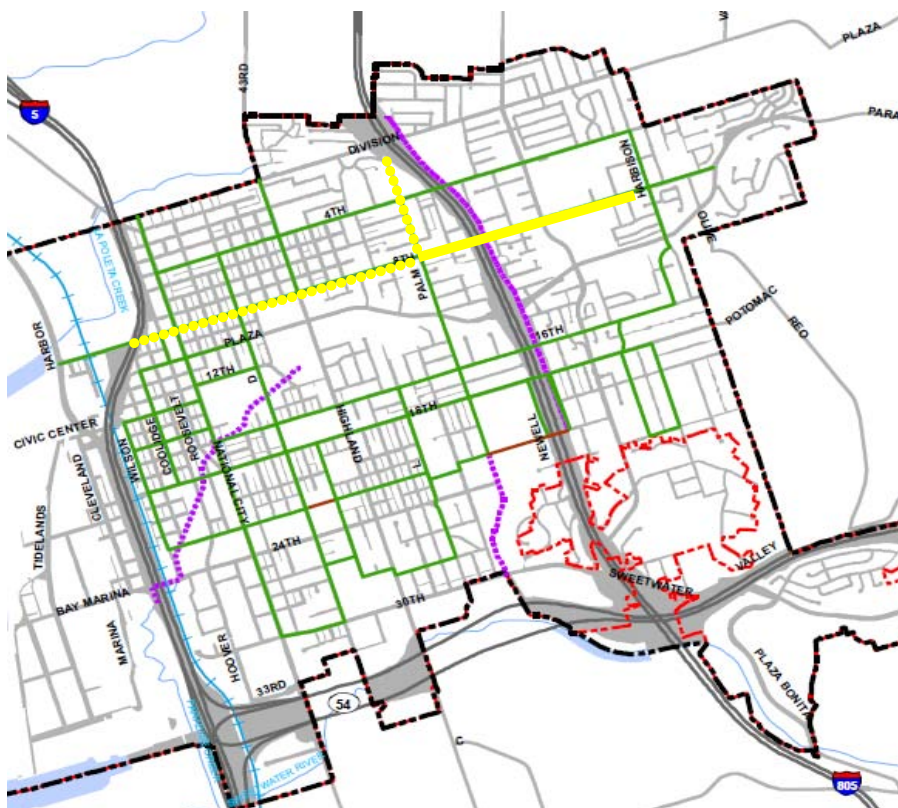
The roadway change is one project included in the city’s newly designated Community Corridors program. Significantly, this program includes a new street typology introduced through a general plan update to emphasize streets meant to be more pedestrian and bicycle friendly and those that connect community resources such as parks and the library.



Above: National City’s recently completed road diet along the 8th Street corridor.



At right: typical road diet reducing four lanes to three.



Below: National City’s existing and proposed road diets. Graphic taken from its DRAFT Community Corridors map created as part of the City’s General Plan update.

Solid yellow line = existing
Dotted yellow line = proposed

Residents of downtown would have an average of 6.3 VMT compared to a suburban resident with 19.8 VMT per day.

- Centre City Green



Bike corrals like this one in Portland, Oregon are one of the elements to be implemented through CCDC's Green Streets program for downtown San Diego.

**Centre City Green –
Centre City Development Corporation
Making Streets an Integral Part of Community Design**

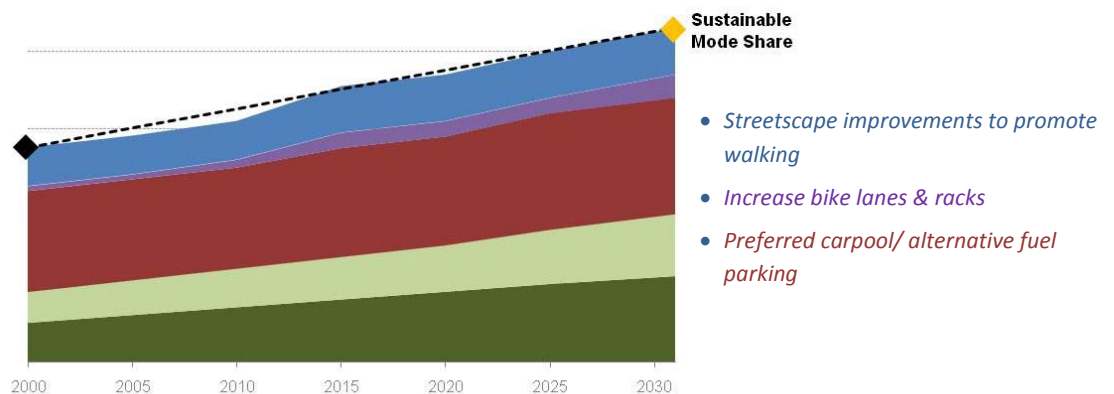
Centre City Green, Centre City Development Corporation's (CCDC) downtown sustainability plan, illustrates one of the region's first efforts to implement 'Green Streets'. The concept of Green Streets was identified as one of seven street typologies for downtown's street system. This approach includes landscaping, reduced water run-off, and improvements for bicycles and pedestrians.²⁴

The Centre City Green plan takes the Green Streets concept one steps further by making the streets an integral component of a larger effort to ensure downtown's sustainability. In this exemplary draft plan, the 'Green Streets Pilot Project and Program' highlight the importance of the spaces between buildings. The program defines a Green Streets Base Plan and a framework for future CCDC capital improvements prioritizing treatments such as road diets along several streets to make room for wider sidewalks and dedicated bike lanes, bike (parking) corrals, and dense plantings of trees and other landscaping.

The Streetscape vitality indicator included in the Plan tracks the development of streetscapes that promote social interaction and a sense of place through sidewalks, and view corridors. The goal is to 'make centre city a top-of-class streetscape environment that promotes walking over all other modes of transit.'

A well designed green street calms vehicular traffic and offers a more pleasant pedestrian environment by narrowing vehicular pavement and providing street-side native plantings that shade the pavement, allow natural (LID) infiltration of stormwater and provide habitat for song birds.'

CCDC Path to Sustainable Urban Mobility



Downtown San Diego's vision: Dependence on wholesale street improvements achieve sustainable urban mobility

SAN DIEGO REGION'S CURRENT APPROACH

WalkSanDiego interviewed city planners and traffic engineers from each of the region's eighteen cities to understand each city's individual approach to street design. Questions were divided into sections regarding how cities (1) *plan* for streets safe for all modes, (2) *implement* these plans and other techniques, and (3) *evaluate* the effectiveness of existing plans and techniques.

This section highlights key findings from the interviews and lists answers to eight specific questions regarding:

1. Street design guidelines
2. Vehicle and multi-modal Level of Service (LOS)
3. Vehicle speed
4. Strategies to prioritize street improvements
5. The degree to which pilot projects have been tested
6. Projects, plans or programs that have been adopted or implemented with demonstrated success
7. Evaluation and measurement tools for multi-modal transportation modes
8. Other notable strategies or programs to plan or implement roads for all users

A general summary of the findings is provided below. More details are outlined beginning on page 22.

1. Does the City have a Street Design Manual or functionally equivalent set of street design standards?

This question was asked to understand underlying principles the City uses in street design and yielded a variety of responses. Street design criteria range from basic Regional Standard Drawings (El Cajon, Imperial Beach, Santee) dating back to the early 1980s to detailed guidelines (Carlsbad, San Diego, San Marcos). Many cities use a combination of their Circulation/Mobility Element of the General Plan, Specific Plans, and/or Bicycle and Pedestrian Master Plans to augment design guidelines. However, basic design guidelines focus on functional street classifications and anticipated traffic volumes. This diminishes safety and marginalizes efforts to include pedestrian and bike facilities.

The best example of comprehensive design guidelines is the City of San Diego's 2002 Street Design Manual. However, this too outlines street treatments based on vehicle-focused street classifications and does not consider contextual land uses. Throughout the San Diego region, pedestrians and bicyclists remain a low priority in street design decisions.

Cities going through General Plan updates have an excellent opportunity for cities to re-evaluate transportation policies and street design guidelines that will balance bicycle and pedestrian safety as an integral component of street improvement projects. Many cities are taking advantage of this opportunity to do so.

2. Does the City allow reduced LOS – D, E, or F? Are pedestrian and bicycle LOS considered?

This question was asked to understand what role vehicular LOS plays in decision making. Most cities interviewed have a target LOS of C or D. According to the American Association of State Highway and Transportation Officials (AASHTO), roads and intersections graded with LOS C allow for a 'stable flow of traffic'. Roads and intersections graded with LOS D are 'approaching unstable flow'.²⁵ Some cities have allowed for lower LOS (more congestion) from a new development because of benefits to pedestrians or bike access. However, such examples are rare. Typically, engineers must present mitigation measures or "overriding considerations" of traffic impacts under California Environmental Quality Act (CEQA) approval to allow LOS lower than C or D.

A few cities in the region have introduced some flexibility to this requirement through their General Plans. For example, National City's recently updated General Plan (scheduled for adoption in Summer 2011) accepts LOS E or F along the designated Community Corridors and other streets if added benefits are gained for modes such as biking and walking.

One challenge in overcoming the dominance of vehicle-based LOS standards is the lack of an alternative multi-modal methodology that evaluates conditions for bikes and pedestrians. Cities indicated they were aware of the development of a multi-modal LOS methodology, but only one has experimented with them to date. Most cities were hesitant to be among the first jurisdictions to adopt this practice. A multi-modal approach has been included in the 2011 update of the Highway Capacity Manual. This will provide cities with an excellent opportunity to experiment and evaluate street design decisions on bike and pedestrian safety.

3. Does the City design streets to accommodate "maximum" speed or "target" speed? Are traffic taming techniques used to maintain a target speed that is safer for pedestrians?

This question was asked in order to understand the role of vehicular speed in street design and whether there was any intentional effort to slow speeds in certain areas. The question generally led to a discussion of the difference between 'design speed' and 'target speed'. Design speed is 'the maximum safe speed that can be

maintained over a specified section of highway.’ It is determined by the road’s functional classification and anticipated traffic volume. Target speed, on the other hand, is a tool used to design road improvements targeting a particular vehicle speed and is generally more responsive to surrounding land use. Five cities acknowledged a preference for designing for target speeds.

However, many cities had at least one example where traffic engineers had worked to calm traffic speeds, particularly in areas around schools for Safe Routes to School projects and in response to community concerns about excessive vehicle speeds. These sample projects are detailed in the individual summaries beginning on page 22. Some cities such as Encinitas, Oceanside, Carlsbad, and Vista have established neighborhood traffic calming programs that allow citizens to communicate concerns about specific streets or intersections where they would like to lower vehicle speeds.

4. How are street retrofit projects prioritized and funded? Does the City have any policy outlining how to prioritize street improvements?

This question was asked to understand the extent to which cities strategically identify roadway improvements and how bicycle and pedestrian friendly design components are integrated into the strategy. Most cities in the region prioritize street retrofits through a pavement management system to repair degrading streets on a cyclical basis. These are coordinated with improvements identified in Bicycle Master Plans, Pedestrian/Trails Master Plans, a variety of Specific Plans, especially in downtown areas, Capital Improvement Projects (CIP) lists, as well as concerns from residents about particular intersections or corridors.

Other cities such as Imperial Beach, National City, Escondido, San Marcos and Chula Vista strategically target street improvements along community corridors driven by safety concerns or land use changes (e.g., areas targeted for economic development and mixed use such as integrated residential and commercial zoning). These are notable as resulting design could better integrate surrounding land uses.

Most cities coordinate bicycle and pedestrian improvements with street upgrades. However, cities use separate funding for these improvements rather than integrate the improvements in routine street upgrades. This is mostly due to limited funding, but also to a philosophy that bicycle and pedestrian related projects are considered separately from everyday street upgrades.

Many cities have also established transportation committees to receive input from residents on roadway priorities (e.g., Coronado, Encinitas, Chula Vista).

5. Does the City allow for pilot programs to test techniques that may vary from or go beyond the current street design standards?

This question was asked to understand the cities' general willingness to implement innovative ideas piloted elsewhere. Eight cities highlighted efforts to use what they considered to be pilot projects. These projects included road diets, roundabouts, innovative bike facilities such as sharrows and colored bike lanes, and back-in diagonal parking. Each of these cities uses the outcome of the pilot project to evaluate future use. Cities not using pilot programs indicated their staff and City Council are reluctant to try techniques not yet tested elsewhere or that have not been nominated as recognized engineering standards.

6. What is a project, plan, or program that has been adopted or implemented with demonstrated success?

A menu of responses to this question was provided by WalkSanDiego, based on information obtained during the interview. The most common item selected was "an exemplary traffic calming project implemented or planned to balance safety needs for a variety of street users". Cities such as Carlsbad, Chula Vista, Del Mar, Encinitas, Escondido, La Mesa, National City, Oceanside, San Marcos and Solana Beach listed projects in which traffic engineers responded to resident concerns about high vehicle speeds and designed improvements that made the road safer for all users. A variety of tools were employed, such as the narrowing of vehicle travel lanes, the use of beacons or flashing lights, and the implementation of road diets, corner curb extensions, roundabouts, and mid-block crossings to slow traffic and make drivers more aware of pedestrians and bicyclists. These projects demonstrate that cities have the tools for safer street design. These tools are currently being used on a limited basis and have much room to be integrated in a comprehensive, consistent strategy.

Another success mentioned by cities (Chula Vista, National City and Vista) was the completion of comprehensive Safe Routes to School (SRTS) programs. Using state or federal SRTS grant funding, cities worked with residents to prioritize areas for improvements to make walking to school safer.

Unique to the City of El Cajon was a successful Annual School Survey Traffic Request Summary. This document outlines a comprehensive list of improvements identified by school families and residents around the city's schools. Included in the summary are City

responses detailing the planned approach to implement the needed improvements.

The cities of Carlsbad, Encinitas, Escondido, Del Mar, Lemon Grove, and El Cajon prioritized improvements in their downtown streets, including enhancements to street design. Consequently, these areas now attract more people and stimulate economic activity. Again, these examples demonstrate cities' ability to balance the needs of multiple street users should be strategically integrated in a more comprehensive manner throughout the city.

7. Does the City measure bicycle and pedestrian traffic?

Most of the cities interviewed do not conduct ongoing evaluations of pedestrian and bike improvements or counts. Most common are occasional counts required for grant requests. This is in great contrast to the ongoing, detailed counts of vehicle traffic.

8. What are notable initiatives the City has taken to improve pedestrian or bicycle safety?

Several notable initiatives have been implemented by cities in the San Diego region. They are highlighted below for their alignment with the best practices discussed earlier:

(a) A comprehensive approach to prioritizing street improvements based on land use or complete street related goals.

Cities such as Chula Vista, Escondido, Imperial Beach, National City and San Marcos are prioritizing street improvements as a component of land use. In corridors where mixed use development is proposed, or for corridors that connect community facilities, these cities are prioritizing a multi-modal street design. A good example of this is in Escondido where staff is considering designating certain streets as 'complete streets' to highlight these as pedestrian and bike friendly corridors and to attract economic development. These streets are mixed-use thoroughfares that bisect the City.

(b) An integrated approach to multiple modes of transportation

As a component of its General Plan update and to reflect in detail residents' 'core values', the city of Carlsbad put together nine working papers, each to reflect a top priority cited by the community. One of these was entitled '*Walking, Biking, Public Transportation and Connectivity Working Paper*'. It provides a great example for other cities by introducing the concept of complete streets, LOS alternatives and street typologies, as well as assessing how transportation planning can be more comprehensive for a variety of modes. Two of the observations from the working paper are outlined below.

'Expansion of the traffic calming program may be considered to encourage slowing vehicle speeds, thereby enhancing safety of non-motorized travelers. In addition, pursuit of complete street designs to balance usage of the roadway by multiple users traveling at varying speeds will help make Carlsbad's transportation system safer.'

['Improvements in roadway operation standards] could be complemented with new performance measures that track trade-offs between motorized and non-motorized mode of travel and the issues associated with accepting reduced levels of service for vehicular flows in the name of enhanced walking and bicycling. The City could also consider data collection and monitoring programs necessary to support calculation of performance measures on an ongoing basis. The City could also look at land use character-based approaches, allowing variation or exemption from LOS standards for districts that are more pedestrian-oriented (such as the Village).'

Details from individual interviews follow.

Carlsbad

Street Design Regulations	The City has a set of engineering design standards that show roadway cross sections for functional street classifications that corresponds with the Circulation Element of the General Plan. The standards include target volumes and design speeds for each street classification.
Vehicle LOS	The City's established LOS target is level D. The City has not experienced efforts to allow for a lower LOS. However, staff believes mindset is starting to change, especially through the City's General Plan update in consideration of Complete Streets and non-vehicular modes of transportation. Staff welcomes the opportunity to realign LOS with other decisions. They have not used multi-modal LOS yet but expect to consider it as part of the complete streets requirements.
Speed	The City has a neighborhood traffic calming program in place which outlines a process to introduce traffic calming treatments on neighborhood streets. The City is revising the program to include more cost effective measures such as residential stop signs, speed cushions, speed tables and roadway striping as possible residential traffic management tools. The City has had to re-evaluate certain speed zones recently. The police department has found that the current speed limits are unenforceable because the posted speed limit is much lower than the actual speeds as measured by speed surveys. As a result, the City has had to raise certain speed limits. Staff would prefer not to raise speed limits but are constrained by State law.
Street improvement prioritization	Street retrofits are currently prioritized through the City's pavement management program. As part of this, all streets have been inventoried and scheduled for resurfacing. Bike and pedestrian improvement projects (listed in the City's 2007 Bicycle Master Plan and CIP) are coordinated with these improvements to the extent possible.
Pilot projects	Through the City's neighborhood traffic calming program, it is installing more residential stop signs as a traffic calming measure. Although not ideal, they can provide them at a lower cost than other improvements and are finding it's a good solution especially for low volume streets.
Successes	Staff has been authorized to implement pedestrian access improvements on Carlsbad Boulevard (Coast Highway) and the Village area. Improvements under consideration include in-pavement flashing lights,

	<p>rectangular rapid flashing beacons (RRFB) and countdown pedestrian signal indications.</p> <p>In addition, a Safe Routes to School project in front of Kelly Elementary School was initiated to narrow crossing distance and slow vehicle speeds on Kelly Drive, which functions as a residential street but was built to arterial width. Proposed road improvements include sidewalk popouts at the school driveway, a median and a traffic circle at Kelly Drive and Park Drive.</p>
Evaluation and Measurement	The City has a consultant who completes an annual traffic monitoring program. Part of the City's Growth Management Plan, the traffic monitoring program measures traffic and determines level of service at various intersection and midblock locations.
Notable	<p>The City is currently going through a General Plan update and produced a working paper, <i>Walking, Biking, Public Transportation and Connectivity</i>, to look at solutions for a variety of transportation modes. This is a very good resource in that it provides a comprehensive look at connections among all modes of transportation in the city. However, target vehicle LOS is still highlighted as a goal.</p> <p>The city is initiating public outreach for an arterial traffic calming program for La Costa Avenue in April 2011 to look at alternatives that will reduce vehicle speeds and improve access at intersections and driveways for residents. Improvements being proposed include a road diet, narrowing of lanes, and roundabouts. This process and the street improvements, once completed, will provide a good example for the region of how to slow speeds on arterials with higher volumes of traffic and make the road safer for all users.</p>

Chula Vista

Street design regulations	The City relies on a Construction Design Manual and its Subdivision Manual for design criteria as well as drawings from the various planning documents where applicable. These are consolidated into a Traffic Engineering Checklist. Traffic Engineering tries to make sure that the designs implement the policies of the General Plan's Land Use and Circulation Element, the Urban Core Specific Plan, the Bicycle Master Plan and the Pedestrian Master Plan.
Vehicle LOS	In general, the City designs its streets to meet vehicular LOS standards. LOS C is accepted everywhere but no more than two hours each day of D. Staff is looking to implement a policy where LOS standards in the Urban Core Specific Plan area would not be as stringent. They have not used multi-modal LOS.
Speed	The City designs its streets to meet vehicular LOS standards. There is little demand for slower speeds on the prime arterials and expressways that connect to the eastern area.
Street improvement prioritization	The city has several corridor upgrade projects in process: Streetscape Master Plans for Main Street west of 805 and 3 rd Avenue in the central business district. Both incorporate bike lanes and propose roundabouts. These are good examples of a more comprehensive approach to street redesign. In general, intersections are upgraded primarily in response to reported safety issues.
Pilot projects	The City has considered reverse angle parking on Third Avenue (between F and G) but will likely not implement until other improvements such as a proposed road diet and bike lane striping are put in place first. In general, they only use techniques that are in the professionally approved design manuals. They prefer a baby step approach for pilot projects in order to allay resident and City Council concerns over unfamiliar designs.
Successes	<p>The City completed a comprehensive Safe Routes To School project with 36 elementary schools. Field surveys or walk audits were conducted for each of these schools to provide detailed comments about the existing conditions. This effort helped create the first ever pedestrian master plan for the City. It has also helped attract substantial grant funding for improvements.</p> <p>The City has a Safety Commission with staff members and seven residents to provide a forum for</p>

	residents to discuss traffic and transportation issues (bicycle and pedestrian projects) with staff.
Evaluation and Measurement	The City collects and evaluates pedestrian and bike crash data provided through the Statewide Integrated Traffic Records System (SWITRS). It also counts bicycle traffic on the Bayshore Bikeway. This count is easier in this area than others because counting tubes can be placed on the ground which only allows for bicycle traffic (no cars).
Notable	The Urban Core Specific Plan supports multi-modal streets and was an early pioneer in the San Diego region to use street classifications determined by land use rather than historical functional classifications based on vehicle use. Successful corridor projects in the Urban Core may increase demand for complete streets in other areas of the City. City staff is making a thorough effort to coordinate bike and pedestrian upgrades.

Coronado

Street design regulations	The City uses the Circulation Element from its General Plan (1995) as its design manual. This Element includes design specifics based on traditional functional street classifications. This will be updated as the newly created Bicycle Master Plan is being implemented.
Vehicle LOS	The City's established LOS target for arterial streets is level C with a peak hour goal of D. They have not used multi-modal LOS.
Speed	All streets are 25 mph except for portions of Orange Avenue within Caltrans jurisdiction. There is a segment of Orange within the City's jurisdiction where the city recently reduced the speed limit from 30 to 25. This was allowed through a stipulation within the California Vehicle Code to reduce speed by 5 mph in areas that meet a certain density requirement.
Street improvement prioritization	Street improvements are prioritized through an annual traffic report. There are few accidents in the City and most are happening on Orange or SR75. Sidewalk and street maintenance projects are included in the CIP program each year. On average, every City street receives some form of pavement maintenance once every seven years.
Pilot projects	The City constructed a temporary roundabout in 2009 to test its viability. The temporary structure will remain until a permanent installation is funded and is now accompanied by visual improvements to make it visually more attractive. It has successfully slowed vehicle speeds at the intersection.
Successes	The City recently formed a Citizen Transportation Committee with participation from an elected official and residents to provide a forum to discuss traffic and transportation issues.
Evaluation and Measurement	The City evaluates pavement conditions on an on-going basis. No evaluation of pedestrian or bike facilities although the recent approval of a Bicycle Master Plan will most likely result in the creation of some form of annual evaluation process.
Notable	The City has prioritized pedestrian improvements in its downtown as called for through the Orange Avenue Specific Plan. The City completed its first Bicycle Master Plan in March 2011 and will be implementing improvements. Innovative facilities such as sharrows and green bike lanes were proposed but some were eventually taken out due to concerns from the business community and community at large.

Del Mar

Street design regulations	The City's Camino del Mar Streetscape Plan serves as its street design manual. The plan calls out the need for pedestrian and bike friendly infrastructure and has helped shape the community.
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Vehicle LOS	The City does not have a target LOS. They have not used multi-modal LOS.
Speed	The City has concentrated on lowering vehicle speeds through its downtown area. Speeds in residential areas tend to be slow because of existing narrow streets. There have been improvements on road such as Jimmy Durante Boulevard, but nothing geared towards slowing traffic.
Street improvement prioritization	Prioritization occurs through ongoing road maintenance. Biggest goal for the city is to revitalize the downtown Village area, to ensure appropriate access to commercial outlets and make a continuous sidewalk network to connect to adjacent areas. Expanding the sidewalk network will require working with individual property owners to acquire right of way.
Pilot projects	The City had proposed a road diet on Camino del Mar Road to convert the existing two lanes to one lane with back-in parking. Council declined the project due to concerns that it would cause major backups into neighborhoods and negatively impact neighboring cities since so much traffic is through traffic.
Successes	A focus on pedestrians has always been a priority for the downtown Village area and has really shaped the community.
Evaluation and Measurement	The city does not conduct ongoing evaluations of its street improvements.
Notable	The City is using mid-block crossings with horizontal flashing beacons along Camino del Mar Road. They have been successful in slowing vehicle traffic in this section and making area safer for pedestrians crossing. These provide a good example for the region on successful use of mid-block crossings.

El Cajon

Street design regulations	The City uses regional standard drawings and Public Works Standards as street design guidelines. These outline basic construction standards for different street classifications.
Vehicle LOS	The City does not maintain a target LOS, but improved LOS is the ultimate goal. The City has not used multi-modal LOS although they are aware of its existence and open to exploring its use.
Speed	Design speeds are used. The City does not have examples where they have lowered vehicle speeds, other than some examples of speed hump installation. There are many many streets posted over 35 mph.
Street improvement prioritization	Street improvements are prioritized based on the City's pavement management system. Projects from the City's Bicycle Master Plan (2010) are also slowly being incorporated into these improvements, however, the City generally seeks special funding implement the bike improvements.
Pilot projects	The City is open to piloting projects but does not have specific examples. El Cajon is currently planning to narrow travel lanes on Broadway in order to make room for Class II bicycle lanes. The City tested a chicane in a residential neighborhood to lower vehicle speeds.
Successes	Annual School Survey Traffic Request Summary - El Cajon summarizes traffic safety requests from all schools within its school district each year through an Annual School Survey Traffic Request Summary. In this, the City lists the various requests for street improvements around schools as well as specific action items for staff. This is a good model for other cities as a way to document and synthesize street improvements around schools.
Evaluation and Measurement	The City does not conduct ongoing evaluation of its street improvements.

Notable	The City's existing grid pattern street network is very good. The City has focused much of its recent efforts on improvements in its 541-acre downtown area which is very appealing and walkable. A section of the City's Main Street was recently narrowed in order to allow for wider sidewalks and angled parking. A draft of its Downtown Specific Plan is out for comment and will be approved by Council in Summer 2011. This will guide further development of the downtown area.
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Encinitas

Street design regulations	The City currently has street design guidelines. These will be updated to correspond with newer policies established through the General Plan update process. One challenge of the guidelines will be addressing the unique characteristics of five distinct neighborhoods within the City. Some neighborhoods for example don't want sidewalks because they like the informal, beach feel.
Vehicle LOS	The current Circulation Element calls for LOS threshold D. City staff has presented statements of overriding considerations to City Council in the past to allow 'failing' LOS tied with a proposed development project. This is facilitated by ongoing resident support of improved walkability in their communities. The City is not using multi-modal LOS yet. The traffic engineers are familiar with some of the newer techniques but feel they are not ready to use them routinely. The City is considering whether to revise the current LOS standards to reduce the need for roadway widening at key locations, in order to preserve community character and the environment and encourage multi modes of transportation are being considered a s part of the City's General Plan Update.
Speed	The City designs for target speeds and typically likes to post lowest speed legally possible within 85 th percentile rules outlined in California Vehicle Code. Two new roundabouts were added in 2008 on Leucadia Boulevard west of I-5. These were successful in reducing vehicle speeds along the corridor and as a result, the City is considering to reduce the speed limit 5 mph. Residents have generally been supportive of the roundabouts and cities such as Carlsbad are looking at this example to emulate. There are 20 streets in Encinitas posted at 40 mph or greater. Currently another roundabout (unfunded) is planned for Leucadia Blvd. and as part of Caltrans improvements roundabouts are planned for the I-5 & Birmingham interchanges (North- and South-bound on and off ramps). Additionally, roundabouts are a normal consideration for the City when studying traffic control improvements at intersections.
Street improvement prioritization	Projects are generally prioritized by funding availability (matching funding goals), crash data, and city council goals. Pedestrian and bicycle crash data are also used to prioritize projects on an ongoing basis.
Pilot projects	The City has experimented with pilot projects such as roundabouts and is planning a road diet along Coast Highway 101. In addition to funding, staff noted that the biggest potential impediment to implementing more pilot projects is working with residents to maintain the City's current character while still invoking change. A significant amount of outreach has been completed for the Coast Highway 101 improvements. Ideas such as the roundabouts and a road diet were developed by residents through the public workshop process.
Successes	With participation from City staff, a Pedestrian Safety Assessment was completed for the City from the Berkeley safety program two years ago and the results of the assessment are utilized by staff when reviewing other projects.
Evaluation and Measurement	The City does not conduct ongoing formal evaluation of its street improvements; however, it does monitor crash data and evaluates accident scenes and makes road changes as appropriate.
Notable	The City is planning a series of traffic calming improvements along Coast Highway 101 to include a road diet, lane narrowing, installation of HAWK signals, and the planting of more trees. These positive

	changes were initiated through public outreach and will provide an excellent example for the San Diego region of complete streets.
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Escondido

Street design regulations	The City currently has street design guidelines. These will be updated to correspond with newer policies established through the General Plan update process. Existing design criteria are categorized by functional street classifications based on ADT and LOS desired. Street design also takes into consideration goals outlined in the Bicycle Master Plan, and Downtown Specific Plan.
Vehicle LOS	The City LOS threshold is a goal of level C. With the General Plan update, the City would like to develop 'urban' LOS which allows for lower vehicle LOS in areas the city wants to make more walkable. This aligns with the City's overall strategy of prioritizing specific roads for pedestrian improvements. The City has not used multi-modal LOS but could include this with the updated mobility element in general plan.
Speed	In an effort to lower speeds, the City is looking at posting signs along signal corridors identifying the optimum speed of travel and not list speed. The City tries to implement traffic calming projects in key areas, especially where there is resident concern. Grand Avenue in the downtown area has been a priority to add curb extensions and high visibility crosswalks to slow speeds.
Street improvement prioritization	Prioritization of street improvements to promote walkability in the City is being driven by land use, specifically in corridors where the city wants to promote mixed use and higher density. The main priority is revitalizing Escondido Boulevard. The City will then try to duplicate these efforts on other main corridors such as Grand Avenue, 2 nd Avenue, and Valley Parkway. The new General Plan will lay out street design guidelines for pedestrian oriented streets. These guidelines will tie in with proposed land use changes and existing plans such as the Downtown Specific Plan.
Pilot projects	The City piloted a road diet on Grand Avenue to turn the four-lane road into a two-lane road, include angled parking, and widen the existing bike lane. It was deemed a successful program.
Successes	The City has a strategic approach to pedestrian/bike friendly street improvements based on land use and community input. With the main focus downtown, the city will strengthen linkages on potentially five of its major corridors to name as complete streets and concentrate improvements for bike and pedestrian safety. The City has successfully established a substantial amount of Class I bike facilities to link downtown with Daley Ranch.
Evaluation and Measurement	City staff evaluates each project informally as a team to understand lessons learned. In addition, Escondido follows a mantra of 'Popular Projects' – or those projects that garner wide public support from residents. As a result, the City routinely gathers input from local street users for use in construction documents. Success is measured by functionality and expectations of citizens.
Notable	The City is looking at two focus areas to improve walking connections and take advantage of existing grid street network. The two areas are at Ash and Valley Parkway where the city would like to promote an urban village and the connection between Palomar Hospital and existing Sprinter station.

Imperial Beach

Street design	The City uses Regional Standard Drawings to guide street design decision. The City also uses its Bicycle
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regulations	Master Plan (2009) to integrate these improvements with road construction projects, however, the City generally seeks special funding to implement the bike improvements.
Vehicle LOS	The City doesn't consider LOS because it doesn't have projects that increase the Average Daily Trip (ADT) number. City staff has presented statements of overriding considerations to City Council in the past to allow 'failing' LOS in favor of other bike and pedestrian improvements.
Speed	The City has done some traffic calming projects, most recently at Central Elementary. These improvements consist primarily of curb extensions and raised crosswalks.
Street improvement prioritization	Making streets friendlier for biking and walking is a priority for the City. The city's strategy for updating streets is tied with the commercial redevelopment of major corridors such as Palm Avenue, Seacoast Drive, and 13 th Street Corridor. Criteria for other improvements are based on physical street conditions. A city-wide street conditions study was completed in 2008.
Pilot projects	The City has contemplated back-in parking but has not implemented. Sharrows are included as proposed improvements of the Bicycle Master Plan. These have not yet been painted although the City has requested grant funding to complete.
Successes	The City's focus on prioritizing traffic calming projects on streets with higher volumes of traffic has been land use driven and coordinated with an effort to revitalize commercial development. The City has been successful in the areas where funding was found to implement, such as Main Street. The challenge remains to find additional funding. The City acknowledged they would like to create a pedestrian friendly environment in order to stimulate the economic revitalization.
Evaluation and Measurement	The City has taken bike counts for the Bayshore Bikeway. There is no ongoing evaluation of projects.
Notable	Through its Commercial Zoning Review program, the City is evaluating how to incentivize more and better retail development, specifically mixed use development. To reach this goal the City is proposing seven performance based standards to offer developers in exchange for a height and/or residential density bonus. If the developer incorporates at least two of the seven options in proposed development plans, additional height and/or density can be offered on the project. One of these standards would ask that developers dedicate an additional one foot of private property to public Right of Way for the length of the project. This additional space could allow for a wider sidewalk or bike lane for example. Another standard asks developers to provide an additional 100 square feet of public open space/plaza space/ public community amenities (with a minimum of 600 square feet in one place) within the project in order to allow for more height and density. These incentives demonstrate a creative approach for other cities in the region to enhance walkability.

La Mesa

Street design regulations	The City has its own street design regulations. These will be updated in the near term in order to integrate concepts and goals from the Walkability Plan.
Vehicle LOS	The City of La Mesa General Plan Circulation Element outlines the significance threshold and states, 'When a traffic analysis indicates that the LOS for a street reaches "D" or below, the City will determine what improvements or changes in operations are needed to maintain or improve the LOS, and identify potential funding and prioritization for the necessary improvements through the Capital Improvement Program.'
Speed	The City has a policy to utilize traffic calming techniques to keep speeds within 7 mph of the posted speed limit. There is one street in La Mesa, Fletcher Parkway, with a posted speed limit above 35 mph. The City systematically looks for opportunities to reduce corner radii on all street upgrades.

Street improvement prioritization	The City's street retrofit program is guided by the La Mesa Walkability Plan. A road diet was implemented for 70 th Street and the intersection of Yale and University Avenue was enhanced to reduce the pedestrian crossing distance. A major project to narrow Allison Avenue near Palm Avenue and add curb extensions at intersections and mid-block crossings is currently in process. Other projects are on the CIP but are waiting for future funding.
Pilot projects	La Mesa has tested colored pavement for bicycle lanes and reverse diagonal parking. Pilot projects are typically evaluated for applicability to other areas.
Successes	The City of La Mesa received a Complete Streets award from the San Diego Section of the American Planning Association in May 2011 for the Allison Avenue Street Improvement Project. This is one example of successful implementation of complete streets in La Mesa.
Evaluation and Measurement	The City feels that the Walkability Plan has been effective. The City experiences pedestrian/bike crashes but the data is generally not evaluated on a routine basis. As part of the Safe Routes to School Grant program the City is required to collect bicycle and pedestrian data before implementing a project. Staff would like new technology to conduct more pedestrian and bicycle counts.
Notable	The La Mesa Walkability Plan integrates bike and pedestrian improvements for a complete streets approach in the San Diego region. A map with a complete system of walking and bicycling facility network was adopted with the Plan. It also provides an example of a context sensitive design street approach for the San Diego region as design treatments are recommended by street context: hillside, streets, etc. The Plan seeks to prioritize connections within and between neighborhoods making walking and bicycling a first choice for short and medium distance trips. The City has followed through implementing components of the Plan and using it as a guide to drive decision making.

Lemon Grove

Street Design Regulations	The City uses the Mobility Element from its General Plan (1996) for street design standards. Included in this Element is a Pedestrian Corridor Plan which illustrates the City's major pedestrian corridors where more people are walking and where safety improvements should be made. The City also has a Bicycle Master Plan (2006) it uses to guide decisions on bike facility improvements. The City is currently assessing whether to update its General Plan, specifically to comply with Assembly Bill 1358 (the 'complete streets' bill).
LOS	The City LOS target is C but will allow for Level D. They prefer not to have Levels E or F. Staff acknowledges that decisions are mostly based on ADT as it is necessary to accommodate cars among other modes.
Speed	The City's roads are largely built out so engineers are not able to design roads for design speed. The city has not experimented much with slowing traffic. The City experimented with a road diet on Massachusetts Avenue where a four-lane road was converted to two lanes with a turn lane in the middle. A major improvement is being implemented along Broadway and Main Street to divert pass-through traffic and provide a pedestrian friendly environment around the trolley station.
Street improvement prioritization	Lemon Grove relies on its Pavement Management Program and collision reports produced in the sheriff's office to prioritize funding for street improvements. Staff acknowledged that it is currently difficult to plan major improvement projects due to budget constraints for construction and maintenance. The City's improvements are largely limited to curb ramp and sidewalk improvements where necessary. Frontage improvements and street dedications are happening one at a time with development proposals.
Pilot projects	The City is open to trying pilot projects, but do not yet have specific examples. A roundabout was proposed within the city was later taken out due to emergency response questions.

Successes	The City has invested significantly in its downtown area which surrounds a trolley depot.
Evaluation and Measurement	The City measures and evaluates pedestrian traffic on a limited project by project level, typically as required by the Safe Routes to School program.
Notable	Lemon Grove is investigating the feasibility of creating a major pedestrian promenade adjacent to the downtown area and its primary trolley stop on Broadway. If completed, the promenade would create a friendly oasis for all trolley users and provide an excellent, safe connection to downtown and city hall. In addition, a feasibility study is underway to evaluate extending this pedestrian promenade from the planned segment in the Downtown area to the southernmost boundary of the City.

National City

Street Design Regulations	The City does not currently have a street design manual. However, new guidelines will be put in place with approval of the General Plan Circulation Element. This will include suggested roadway cross sections for each street classification, including the newly created Community Corridors. The updated General Plan is expected to be approved in Summer 2011. Traffic calming concepts are also outlined in the City's Westside Specific Plan.
Vehicle LOS	As part of the General Plan update, the City developed their own roadway LOS thresholds based on SANTEC Guidelines. The City will accept LOS E or F along the designated Community Corridors and other streets if added benefits are gained for modes such as biking and walking. Once adopted, future traffic analyses for the City will include these guidelines. All City streets have speeds of 35 mph or less except Paradise Valley Road and Harbor Drive. The City is considering using multi-modal LOS standards in the future, since they are now included in the 2010 Highway Capacity Manual.
Speed	The city conducts certified speed surveys consistent with the California MUTCD and California Vehicle Code to determine 85 th percentile speeds and appropriately sets speed limits. Staff considers the most effective way to reduce speeds is through traffic calming.
Street improvement prioritization	Priorities for street improvements are identified through the City's 5-Year CIP, implementation of the City's first Bicycle Master Plan (2011), traffic calming improvements on Community Corridors identified in the updated General Plan, and enhancements to the 8 th Street Corridor. The City also has a program to upgrade traffic signals which includes pedestrian countdowns, audible pedestrian signals protected left turn phasing and enhanced signal communications. The City maintains an inventory of sidewalks to address gaps in the system and substandard curb ramps, sidewalks and crossings to be consistent with the Americans with Disabilities Act.
Pilot projects	The City has piloted a road diet program along the 8 th Street corridor: They recently completed a road diet on this corridor from Palm Avenue east to Harbison Avenue, funded through its street resurfacing CIP. Additional road diets are planned from Palm Avenue west to Harbor Drive. SANDAG Smart Growth Incentive Program Grant funds, Safe Routes to School Grant funds and HSIP Grant funds will be used to implement these projects. The City is also in the process of installing its first roundabout as part of its Safe Routes to School Program.
Successes	The City has completed a successful Citywide Safe Routes to School Program to address safety at all 14 schools in the city. Enhancements included 37 solar-powered radar speed feedback signs with flashing beacons, 26 additional solar-powered flashing beacons, 6 in-roadway warning lighted crosswalk systems (pedestrian actuated and solar powered) and pedestrian countdown signals at 18 intersections. The final phase of the citywide project will enhance school crossings with bulbouts, pedestrian refuge islands, and enhanced signing and striping as well as incorporate an education component. As part of the program, the City established a Safe Routes to School Task Force that meets bi-annually to discuss issues and provide project updates.

	The City is preparing a Climate Action Plan as part of the General Plan update. The CAP will address GHG reduction goals, include VMT targets, and provide one of the first examples of this kind of plan in the region.
Evaluation and Measurement	The City uses the Crossroads GIS traffic collision database to evaluate vehicle and pedestrian crashes. The City also has its own pavement management system which they update annually.
Notable	The proposed Community Corridors, which are designed as Complete Streets, illustrate an innovative approach to integrating land use and multi-modal transportation into street design decisions and serve as a good model for other cities to prioritize areas for pedestrian and bicycle safety.

Oceanside

Street design regulations	The Engineering Department maintains a street design manual for its purposes (1991) and is augmented by other planning documents that require specific treatments for various locations within the City.
Vehicle LOS	The City's updated General Plan Circulation Element will target a LOS threshold D.- The Traffic Engineering Department is looking into multi-modal LOS indicators, but there is no plan to use this in the immediate future. The City is interested in information regarding California cities who have adopted an ordinance to adopt multi-modal LOS indicators and lower vehicle LOS, specifically allowed through CEQA.
Street improvement prioritization	Most retrofitting work is done in response to safety concerns and in response to project priorities identified in the bicycle and pedestrian master plans. The City also has some visionary plans that call for Complete Street retrofits on major corridors such as the Coast Highway, but implementation has been limited due to inadequate funding. Installing count-down signals and painting crosswalks at intersections is a current priority for the City.
Pilot projects	The City is experimenting with reverse angle parking and has installed sharrows along several corridors throughout the City.
Successes	The City recently updated its Pedestrian and Bicycle Master Plans. These comprehensive plans are being used to inform an update to the General Plan Circulation Element currently in process. With Class II bike lanes on all major arterials, the City can boast of a complete bicycle network. Oceanside considers itself to be a Bicycle Friendly City and has a robust outreach program driven by local bicycle advocates. Successful projects include the San Luis Bike Trail Facility, the San Luis Rey Bridge, and the 2001 Pier Undercrossing. It is the only city in the region to have a Bicycle Committee. The City recently adopted a Neighborhood Traffic Calming program outlining a process for residents to introduce traffic calming treatments to neighborhood streets which will be included in the appendix of the updated Circulation Element.
Evaluation and Measurement	The City did an extensive evaluation of pedestrian and bicycle crash data during the development of the pedestrian and bicycle plans. The City monitors and responds to crash data but does not have a regular analysis cycle.
Notable	In the City of Oceanside, the Complete Streets concept is most highly articulated in specific plans like the Coast Highway Vision and Strategic Plan, the Mission Avenue proposed couplets, and the El Corazon Specific Plan. The Coast Highway Vision and Strategic Plan promises to enhance "transit-rich" western Oceanside into a thriving, pedestrian friendly, mixed-use area. The Mission Avenue improvements will allow for significantly wider sidewalks and commercial/retail friendly street orientation while beautifying this critical gateway to the downtown and beach areas. The City is the only in the region to be named a 'Bike Friendly Community' by the League of American Bicyclists.

	The City is planning to paint the 8'-wide pedestrian/ bike path on a portion of The Strand which runs parallel with a vehicle travel lane. The approximate ½-mile section between Seagaze Drive and Wisconsin Avenue will be painted dark red to distinguish the bike/ped travel lane from the vehicles'.
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Poway

Street design guidelines	The City's General Plan, recently updated and approved in June 2010, outlines the City's street design guidelines. Arterials in the City were a particular focus of the recent update to change the methodology used to arrive at Average Daily Trips (ADT). The City looked at travel times and vehicle LOS to back into an optimal ADT rather than using ADT to inform other outputs. This resulted in limiting some arterial roads to three lanes instead of widening the road to build new lanes. Updated design criteria focus on traditional functional street classifications.
Vehicle LOS	The City uses a threshold LOS of level C or D. City staff has not presented overriding considerations in the past. The City has not used multi-modal LOS.
Speed	The City generally uses design speeds. It has lowered the speed limit in limited areas given the surrounding land uses. On Pomerado Road for example, speeds were decreased from 45 mph to 35 mph after travel lanes were narrowed and a bike lane added.
Street improvement prioritization	The City has focused in recent years on arterials to move traffic more efficiently along these corridors. Most of these roads are newer with bike lanes and sidewalks included. The City does not have a particular prioritization process. There are few accidents but the City prioritizes these as they occur.
Pilot projects	The City considered a roundabout near the downtown area to keep traffic moving at a slower speed. It was ultimately not approved by the City Council. Other opportunities for pilot projects have not come up.
Successes	The City has had success with the Safe Routes to School program resulting in intersection improvements around two elementary schools. These improvements included a road diet to reduce a four lane road to three lanes and add a sidewalk, median and curb extensions. The City has worked to build its regional bike path to connect Ted Williams Parkway and County parks and to complete an entire loop.
Evaluation and Measurement	The City does not conduct an ongoing evaluation of projects.
Notable	The City will begin a corridor study for Poway Drive, the most highly utilized street in the City in Summer or Fall 2011. The City's goal in creating the plan is to integrate land use and street design. It is currently a wide corridor with three and four lanes of travel in each direction, bike lanes, sidewalks and a center landscaped median. The City wants to look at emphasizing the mixed land uses in this corridor and make it friendlier to pedestrians and bicyclists as it is a major connector in the City between Highway 15 and the downtown area.

San Diego

Street design regulations	The City has its Street Design Manual (2002) and uses it regularly to review proposed development projects and initiate street improvements. The Manual is one of the most detailed in the region in that it also provides a toolbox for traffic calming solutions, policies for sidewalks and parkways, streetlights, and street tree plantings. Design criteria are categorized by functional street classifications based on ADT and LOS desired.
Vehicle LOS	The City accepts LOS D on major streets and collectors where the Average Daily Trips count exceeds a

	defined level. Below the defined level, the goal is LOS C.
Speed	Collector design speeds are 30-35 mph. Major street design speeds are 45-55 mph. Traffic calming tools are outlined in the Street Design Manual to be used by developers in proposed projects.
Street improvement prioritization	Street retrofit projects are coordinated with the City's General Plan Mobility Element, Bicycle Master Plan, Pedestrian Master Plan and Capital Improvement Plan. Council Policy governs project prioritization, however, initiation is closely tied to the Community Plan and Pedestrian Master Plan update process. Projects to address existing deficiencies in streets, intersections, sidewalks, bike lanes, and ADA compliance are continually added to the funded and unfunded capital improvements project list. The backlog of unfunded project is extensive due to the limited funding resources.
Pilot projects	The Green Streets Pilot Project in the Draft Centre City Green Plan will involve several Complete Street/road diets in downtown San Diego. Other Complete Street pilot projects are planned or in the planning stages for University Avenue Corridor and Rosecrans Corridor. The City painted bike sharrows along Adams Avenue.
Successes	The La Jolla Boulevard Corridor Project in the Bird Rock Community involved a road-diet and five roundabouts. Traffic was slowed, walking across boulevard increased dramatically, and business revenue increased.
Evaluation and Measurement	The City does not conduct ongoing evaluations.
Notable	The City has initiated comprehensive Pedestrian and Bicycle Plans that when implemented, will improve multi-modal safety, especially in urban neighborhoods where pedestrian and bicycle collisions are concentrated. The City will need to seek additional funding to realize these improvements.

San Marcos

Street design regulations	The City has its 'Urban Street Design Criteria' which outlines design criteria for functional street classifications based on ADT and LOS desired. This is supplemented by guidelines outlined in multiple specific plans, a Bicycle Master Plan and a Trails Plan. The City is also considering completing a Pedestrian Master Plan in order to detail infrastructure related improvements that are needed around the City.
Vehicle LOS	The City has a target LOS D and does not recall having presented overriding considerations to the Council in the past. They recognized that cumulative impacts must be considered which typically push through higher LOS. Staff believes the City's desire to achieve high LOS has facilitated cut-through traffic from drivers trying to avoid congestion on the freeway. The City would like to look at lowering LOS as a means to discouraging the cut-through traffic in the city. The City will look at multi-modal LOS as part of its General Plan update currently underway.
Speed	The City has used a design speed method. Most of the roads in the city, outside of residential and commercial districts, are 35 mph or greater. There have been some examples of using traffic calming on street sections to slow traffic speeds (as generally requested by residents). As part of its General Plan update, San Marcos is proposing to introduce more mixed use development, and Complete Streets design, along certain corridors. Staff believes this would then drive the mobility strategy. For example, Rancho Santa Fe Road is currently a six-lane arterial. The city is now asking does it need to be so wide? By narrowing, they can make the road more walkable/bikable and also decrease use of the road by commuters.
Street	San Marcos has many new streets with ample sidewalks and bike lanes. The need for new sidewalks is

improvement prioritization	<p>not acute here as in other regional cities. The City uses the GIS-based CrossRoads system to track crashes and prioritize improvements. Reports from the sheriff's office are also used.</p> <p>One particular priority mentioned is the area near Palomar College. As it is starting to redevelop, much of the area will become mixed use. This may drive the need for different road designs to provide more options, especially to connect to the Sprinter.</p>
Pilot projects	The City is interested in testing pilot projects and keeps an ongoing assessment of lessons learned from various projects completed.
Successes	<p>The City has had success with traffic calming projects to increase pedestrian and bicycle safety. Rock Springs Road, an 80'-wide collector with lots of school traffic from surrounding high school, middle school and elementary school(s) was designated for four lanes but constructed for two lanes. San Marcos, with input from residents and school parents, designed a plan to install two roundabouts and narrow vehicle travel lanes in order to slow traffic and separate pedestrian traffic from vehicle traffic. Another example is at the Marcos Street Sprinter Crossing near Buelow Park. The City narrowed vehicle travel lanes, rebuilt and extended a linear park, and created an at grade rail crossing across the Sprinter line (between Autumn and Mission Roads) in order to improve pedestrian safety and walkability in a low income, mixed use neighborhood. The at-grade crossing took several years of design iterations and working with the CPUC for approval.</p>
Evaluation and Measurement	The City evaluates streets for performance on a regular basis and has been successful at obtaining grants for Safe Routes to School and safety and congestion management projects because of its proactive efforts in constantly evaluating its transportation infrastructure.
Notable	<p>The city has a history of winning awards for its specific plans including ones for San Elijo Hills, and the recently completed Creek District, and University District. Generally, these plans outline pedestrian and bike friendly streets. The Creek District and University District Plans will transform 70 and 100 acres respectively into walkable, bike friendly communities in areas within a 2-mile radius of the Sprinter Line. The city is planning an inter-city shuttle to connect job and university centers to transit hubs in order to offer residents additional transportation options. It will circulate through the Creek and University Districts and be free to riders.</p> <p>Additionally, the City has received recent design awards for the Marcos Street Sprinter Crossing and the San Marcos Boulevard Smart Corridor as well as being named Local Agency of the Year by the San Diego Chapter of the Institute of Transportation Engineers.</p>

Santee

Street design regulations	<p>The City uses Public Works Standards (1982) as its street design manual. This is a relatively short document that outlines recommended roadway design criteria (width, turning radii, grading) based on traditional functional street classifications.</p> <p>The City reinforces this with its Bicycle Master Plan (2009) to provide bicycle facilities.</p>
Vehicle LOS	The City's General Plan targets LOS C. City staff has presented overriding considerations to Council in the past, especially with newer development. They can accept lower LOS but must make a convincing case. These kinds of decisions are contextual. The city has not yet used multi-modal LOS, although they have heard of it and would be interested in learning more.
Speed	The City typically uses design speeds. The City has installed radar speeds in the past to slow traffic and done some traffic calming.
Street improvement prioritization	The City prioritizes street improvements through a pavement management system and based on input from residents. Other projects have been proposed based on proximity to schools and retail. The City would like to implement more Safe Routes to School projects and fill gaps within the bicycling network

	as outlined in its Bicycle Master Plan.
Pilot projects	Sharrows are included within the city's Bicycle Master Plan. Roundabouts are proposed in the Fanita Ranch Specific Plan.
Successes	Recently narrowed vehicular travel lanes to 10' and added bike lanes to on Mast Boulevard to reduce speed. The project was completed in response to neighborhood complaints about high speeds and difficulty backing out of driveways.
Evaluation and Measurement	The City does not conduct an ongoing evaluation. There are some counts of pedestrians included with vehicle turning movement counts.
Notable	The Fanita Ranch Specific Plan outlines guidelines for narrow vehicle travel lanes and roundabouts. In general, the street design calls for many traffic calming measures.

Solana Beach

Street design regulations	The City uses the Circulation Element from its General Plan and the Highway 101 Specific Plan (2003) for guidance on street design. These are also supplemented by the City's Bicycle Master Plan (1993).
Vehicle LOS	The City has a target LOS C. Staff has presented overriding considerations to council in the past to allow for lower LOS in order to promote. The City has not used multi-modal LOS standards.
Speed	Solana Beach typically designs for target speed and routinely introduces traffic calming features to slow cars. It has painted bike lanes, narrowed travel lane widths and installed curb extensions at intersections. One example of this occurred in the South Cedros neighborhood where, after residents complained of high vehicular speeds, the City narrowed travel lanes, introduced medians and curb extensions and lowered the speed limit from 30 mph to 25 mph.
Street improvement prioritization	The City prioritizes road improvements through a pavement resurfacing program. All comments/concerns from the public are incorporated into this plan. Improvements to Coast Highway 101 area and the Cedros Design District have also been a major priority in recent years.
Pilot projects	The City is interested in testing pilot programs. Painted sharrows and back- in parking are proposed with improvements for Coast Highway 101.
Successes	The City has prioritized improvements in the Cedros Design District and has stimulated economic development as a result. The City has also established a Public Safety Commission, a group that meets monthly with citizens and a commissioner appointed by the Mayor to discuss traffic and pedestrian and bike safety.
Evaluation and Measurement	The City has a Traffic Technical Advisory Committee which meets monthly and combines staff from multiple departments. This committee drafts priorities that are later proposed for the Capital Improvements Project (CIP) list. Staff believes this is a critical element to coordinating improvements throughout the city.
Notable	The City in general has enjoyed much support for walkability from the community and city council. Road improvements proposed for Coast Highway 101 reflect 'complete street' goals by balancing use of the road for multiple users, e.g. pedestrians, bikes and vehicles. Specific improvements include the narrowing of traffic lanes to allow for angled parking, widened and additional bike lanes. The improvements provide a good model for the region in street revitalization. Solana Beach will be initiating a General Plan update Summer 2011.

Vista

Street design regulations	The City's Circulation Element from its General Plan, which includes a Pedestrian Element, is the primary resource for street design criteria. This Element outlines criteria based on standard street classifications. The city's Bicycle Master Plan (2009) also informs street design decisions.
Vehicle LOS	Vehicle LOS is still a fundamental component to decision making. The City generally strives for C or D, although does allow for lower LOS in favor of other bike/ pedestrian improvements. The city has not used multi-modal LOS although this could happen as an element of the General Plan update.
Speed	<p>Currently, high traffic volumes throughout the City are keeping speeds down. However, the City does receive complaints from residents that speeds are high, especially on collectors. Current strategies to lower speeds include using radar trailers, signage, markings, electronic driver feedback signs, enforcement, and turn restrictions.</p> <p>The City also has a Traffic Calming Program to reduce speed of motorists driving through residential neighborhoods. The program was established to outline a process for residents to provide valuable input on street design in areas where they are concerned about speed.</p>
Street improvement prioritization	<p>The City uses multiple resources to prioritize street improvements including a Pavement Management System, an ongoing sidewalk inventory, and crash data produced through its GIS-based Crossroads system.</p> <p>In addition, the City likes to consider improvements based on standard street classifications in the order of arterials, then collectors, then residential. Staff strives to include bicycle facilities, specifically facilities to fill in gaps where there are no facilities.</p> <p>The City has an agreement with the Vista School District to prioritize schools and related sidewalk improvement projects. As a result, they have produced many applications for Safe Routes to School funding and have been successful.</p>
Pilot projects	Staff is continually keeping up-to-date on the latest research and technological advances and innovations in the transportation engineering field in an effort to implement new devices and technologies which have achieved useful results. They have not yet experimented with road diets but staff anticipates a project like this happening on South Santa Fe Road as part of redevelopment of the area.
Successes	The City's Safe Routes to School program has yielded positive results. The City has recently constructed several pieces of missing sidewalk amounting to hundreds of feet in front various schools.
Evaluation and Measurement	The City routinely looks at crash data organized through a GIS-based system call Crossroads. They use this data to choose grant projects. The City includes pedestrian counts as part of vehicular turning movement counts on an ongoing basis and on a limited basis as required for grant applications.
Notable	The City has a very clear understanding of how to prioritize street improvements. In addition, it has an ongoing sidewalk inventory where it will monitor 25% of sidewalks in any given year.

RECOMMENDATIONS FOR LOCAL JURISDICTIONS

The complete street case studies and best implementation practices presented in this report point to seven primary recommendations applicable to local jurisdictions in the San Diego region: ,

1. In designing roadway improvements, utilize the 2010 Highway Capacity Manual's Multi-Modal LOS methodology, or other suitable metrics, for examining the tradeoffs between vehicle capacity and accommodations for transit, bicyclists, and pedestrians.

2. Amend the General Plan or other policy documents as needed to allow the City to accept LOS E or F in corridors where additional safety and access via biking and walking is a priority.
3. Assess corridors where travel speeds exceed 35 mph for potential complete street improvements, especially near schools, mixed-use corridors, and transit routes.
4. Conduct a comprehensive assessment of streets with excess capacity where a road diet would make room available within the right of way for bike/pedestrian safety improvements.
5. Combine pedestrian, bike, and Americans with Disabilities Act (ADA) transition plans with specific transportation goals into a 5-year comprehensive Transportation Action Plan and update it regularly with citizen involvement.
6. Revise traffic impact study guidelines to reflect Complete Streets goals and requirements (AB 1358) and the 2010 CEQA Guidelines (SB 97).
7. Adopt a city-wide Complete Streets Ordinance to establish the goal of designing and implementing streets that accommodate all users.

REGIONAL RECOMMENDATIONS FOR SANDAG

In addition to the pivotal role of *local governments* in completing our streets, the San Diego Association of Governments also has an important *regional* role to play. Through administration of numerous transportation programs and funding sources, SANDAG has the opportunity to lead the region toward safer accommodations for all street users.

As discussed on Page 1, SANDAG is responsible for planning the regional mobility system while reducing per capita driving and attendant greenhouse gas emissions. In recognition of this role, the following recommendations are made for incorporation into SANDAG's Regional Transportation Plan (RTP), the Sustainable Communities Strategy, and the Regional Comprehensive Plan. The recommendations are based on best practice examples of street design approaches outlined above and are firmly rooted in the concept of Complete Streets which ensures that transportation agencies routinely design and operate the entire right of way to enable safe access for all users, regardless of age, ability or mode of transportation.

REGIONAL RECOMMENDATION 1 –

Adopt a comprehensive Complete Streets policy to integrate the Regional Bike Plan, the Model Pedestrian Design Guidelines, and the Smart Growth Design Guidelines into all relevant SANDAG transportation planning documents.

- Adopt a board resolution renaming Board Policy No. 031-Routine Accommodations - as the 'Complete Streets' policy.
- Update Board Policy No. 031 to be consistent with AB 1358, The Complete Streets Act, and to offer additional guidelines to local jurisdictions for designing intersections using a multi-modal Level of Service methodology. Include a decision-making checklist that encourages local jurisdictions to prioritize alternatives to road widening as a mobility strategy for congested roadways..
- Combine the regional bike plan and pedestrian guidelines into one comprehensive Active Transportation Program, complete with a proposed budget for future implementation. Ensure this program takes a comprehensive approach to restoring balance to street design and safety among multiple users around the region.
- Include complete street policies and goals within the Sustainable Communities Strategy as a tool to promote walkable and bikable communities and to provide better access to transit.

REGIONAL RECOMMENDATION 2 –

For funding of all bicycle and pedestrian improvement projects, prioritize existing Smart Growth Areas, Smart Growth Opportunity Areas, and school access routes.

For SANDAG, enhancement of existing smart growth communities, existing and planned transit corridors, and successful implementation of smart growth opportunity areas, are paramount to the region's successful assimilation of additional housing and jobs. As a result, these are also the areas likely to draw high levels of car, foot and bike traffic, especially in urban areas.

- In awarding all transportation project funds, prioritize Complete Streets treatments for existing and planned smart growth areas.
- Develop a phasing plan to program as Early Action Projects, the Active Transportation component of the RTP. Implement these projects within the next ten years to provide visual examples of Complete Streets.

REGIONAL RECOMMENDATION 3 –

Require project applicants for SANDAG funding to utilize the 2010 revisions to the CEQA Guidelines, including completion of a multi-modal LOS analysis.

The Highway Capacity Manual includes guidelines for multi-modal LOS measures. In addition, cities like Charlotte, NC have produced their own multi-modal standards for intersections. This is an important step in creating multi-modal environments.

- In designing in-house (SANDAG) projects or in awarding local funds, utilize the 2010 Highway Capacity Manual's Multi-Modal LOS

methodology, or other suitable metrics, for examining the tradeoffs between vehicle capacity and accommodations for transit, bicyclists, and pedestrians.

- Include criteria for implementing the revised CEQA Guidelines in awarding local funds, including the evaluation of greenhouse gas emissions from new development and reduced emphasis on vehicle LOS.

REGIONAL RECOMMENDATION 4 –

Encourage and reward innovation in street design.

- Reward through TransNet funding criteria jurisdictions who propose innovative pedestrian, bicycle, or traffic calming improvements.
- Encourage local jurisdictions, through grant criteria, to adopt and regularly update a 5-year Transportation Action Plan, created with extensive public involvement.

REGIONAL RECOMMENDATION 5 –

Establish an evaluation, monitoring and reporting system for active transportation projects.

- Using TransNet funding, analyze and publicize VMT impacts, safety outcomes, and GHG contributions of all active transportation projects receiving grant funding.
- Establish a monitoring and evaluation report card to monitor progress and effectiveness of active transportation and transportation projects.

CHALLENGES AND OPPORTUNITIES AHEAD

Challenges

Cities face many challenges in implementing some of the recommendations in this report:

- Limited funding for street retrofit projects. Cities interviewed reported that the long list of improvements they would like to make far exceeds available funding.
- Insufficient training for staff in complete street concepts. There is interest in new street design concepts among some engineers, but several are only comfortable with existing techniques.
- A culture of risk avoidance. Unless solutions are firmly spelled out in approved engineering standards, engineers are afraid to test slightly new techniques for fear of liability and potential lawsuits. This could be overcome with political leadership for the changes discussed in this

report. Changes in design manuals such as the Highway Capacity Manual are critical to give cities the 'cover' they desire to implement change.

- Lack of strategic, comprehensive transportation plans with measurable objectives. Cities usually adopt an annual capital improvement program and list of street retrofit projects according to a detailed pavement management plan. Proposed bike and pedestrian facilities are detailed in separate plans and there is little accountability for implementation. A strategic plan could streamline funding and produce greater results by integrating completion of improvements.
- False perception that traffic congestion is a primary public concern. WalkSanDiego's extensive experience working with neighborhoods all over the region, as well as SANDAG phone surveys, show that residents' primary traffic concern is having safe streets, including accessible walking and bicycling routes for them and their children. When asked, residents consistently state they would prefer safer streets to fewer traffic delays. With this in mind, city officials and staff should seek and learn from citizen input on traffic planning decisions, and provide the appropriate balance accommodating all users of the street.

Opportunities

The paradigm shift discussed throughout this report presents many opportunities:

- In the state of California, SB375 and AB1358 have shed light on the need for more compact land use patterns and alternatives to the automobile. Changes in street design practices should be one of the key elements in meeting these goals.
- An updated Highway Capacity Manual has introduced a multi-modal LOS methodology for cities across the country to use. This presents an excellent opportunity to qualify and quantify benefits gained from improving walkability and bikability.
- A 2006 report produced by the Institute of Transportation Engineers (ITE) and the Congress for New Urbanism (CNU), entitled *Designing Walkable Thoroughfares, a Context Sensitive Approach to Design*, outlines ideal street design metrics and components that architects and traffic planners have reached agreement on.
- Several of the region's cities are completing General Plan updates. In the process, they are re-evaluating planning priorities, including adopting land uses patterns and transportation policies to promote more active lifestyles. This provides an excellent opportunity to strategically address how street improvements can improve access for all users.

- General Plan updates involve extensive public outreach and cross-learning among citizens, elected officials, and city staff. The movement for changing the way streets are conceived of and designed requires a champion in every jurisdiction before it can move forward. The General Plan update process provides an opportunity for such leaders to emerge.

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² David Betz and Curtis Bellow, Fairbank, Maslin, Maullin, Metz & Associates, Memo to San Diego Foundation, September 14, 2010 and personal communication.

³ Statewide Integrated Traffic Records System, 2009, Goldberg 2010

⁴ SANDAG, 2006 Regional Transportation Plan, www.sandag.org

⁵ SANDAG, 2010. Regional Bicycle Plan, www.sandag.org

⁶ 2000 Census data, San Diego region

⁷ Transportation for America and Surface Transportation Policy Partnership, 2011, 'Dangerous by Design', www.t4america.org

⁸ Statewide Integrated Traffic Records System, 2007

⁹ SANDAG, 2050 Regional Growth Forecast, www.sandag.org

¹⁰ National Highway Traffic Administration, [Traffic Safety Facts 2008: Pedestrians](#), www.walkinginfo.org/facts/docs/PedTSF_2008.pdf

¹¹ Dangerous by Design, 2009

¹² B.J. Campbell, Charles V. Zegeer, Herman H. Huang, and Michael J. Cynecki, Jan. 2004, 'A Review of Pedestrian Safety Research in the United States and Abroad', Federal Highway Administration, Publication number FHWA-RD-03-042

¹³ John LaPlante presentation, October 17, 2010, APWA Complete Streets Seminar, San Diego, CA

¹⁴ <http://www.streetfilms.org/long-beach-shifts-cycling-in-to-high-gear/>

¹⁵ Charlotte Street Design Guidelines, 2007

¹⁶ Ibid.

¹⁷ Interview, City of Charlotte Planning and Design Division, February 2011

¹⁸ Interview, Sparky Harris, Sacramento Traffic Engineer, February 18, 2011

¹⁹ <http://www.cityofseattle.net/transportation/BridgingtheGap.htm>

²⁰ Interview, Joel Pfundt, Redmond Principal Planner, May 18, 2011

²¹ Dan Burden and Peter Legerwey, 1999, [Road Diets, Fixing the Big Roads](#), Walkable Communities, <http://www.walkable.org/assets/downloads/roaddiets.pdf>

²² Ibid, p.8

²³ John LaPlante presentation, October 17, 2010, APWA Complete Streets Seminar, San Diego, CA

²⁴ Centre City Development Corporation, 2005, [San Diego Downtown Community Plan, Rising on the Pacific](#), www.ccdc.com