

# URBAN FORM AND TRANSPORTATION

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## INTRODUCTION

The form of future development is a critical component of the Regional Comprehensive Plan. Central among the plan's core values is creating attractive, sustainable communities within the region's existing urbanized areas. Urban design matters at a regional scale and at a personal scale. Our land use and design decisions determine how well our communities serve us in our daily lives, including the quality of our travel choices and our personal safety. That's why the RCP encourages urban development with an appropriate mix of uses designed to create safe and healthy communities. In addition, the relationship between regional transportation plans and local land use plans and policies is crucial in ensuring that the region's transportation system efficiently connects our communities.

The indicator data included in this chapter establish a baseline for tracking progress toward the following goals included in the RCP:

- Focus future population and job growth away from rural areas and closer to existing and planned job centers and public facilities to preserve open space and to make more efficient use of existing urban infrastructure
- Create safe, healthy, walkable, and vibrant communities that are designed and built accessible to people of all abilities
- Integrate the development of land use and transportation, recognizing their interdependence
- Develop a flexible, sustainable, and well-integrated transportation system that focuses on moving people and goods – not just vehicles

The indicators designated for tracking progress toward the above urban form and transportation goals are as follows:

1. Share of New Housing Units and Jobs Located in Smart Growth Opportunity Areas
2. Share of New Housing Units Within County Water Authority Water Service Boundary
3. Annual Transit Ridership
4. Commute Mode Shares
5. Travel Times and Volumes for Key Auto and Key Transit Corridors (future indicator)
6. Miles of Deficient Roads on Congestion Management Program Network
7. Annual Hours of Traffic Delay Per Traveler
8. Regional Crime Rate

## **1. Share of New Housing Units and Jobs Located in Smart Growth Opportunity Areas**

### ***Significance***

A primary goal of the RCP is to balance regional population, housing, and employment growth with habitat preservation, agriculture, open space, and infrastructure needs. The RCP further calls for improving connections between land use and transportation plans through incentives and collaboration. The identification of Smart Growth Opportunity Areas – places that accommodate, or have the potential to accommodate, higher residential and/or employment densities near public transit – will provide a basis for directing transportation improvements, other public facility investments, and incentives through the *TransNet* Smart Growth Incentive Program.

In collaboration with all member agencies, a Draft Smart Growth Concept Map has been prepared and was accepted by the Board of Directors for planning purposes in June 2006. The Concept Map includes nearly 200 existing, planned, or potential smart growth areas that have been recommended by each of the region's 18 cities and the County.

Over time, the number of new housing units and jobs located in Smart Growth Opportunity Areas will serve as an indicator of the region's success in collaborating with and creating incentives for development in smart growth areas and reducing pressure to develop in the region's backcountry. The data below represent new units in those Smart Growth Opportunity Areas that have been identified as "Existing/Planned."

### ***Findings***

The smart growth areas identified on the Draft Smart Growth Concept Map currently include 162,132 housing units and 368,162 jobs. In total, nearly 15 percent of all the housing units in the region and 25 percent of all the jobs are located within the "Existing/Planned" areas. In 2005, new housing units in Smart Growth Opportunity Areas comprised nearly 33 percent of all new housing units in the region. This represents an increase over the previous year.

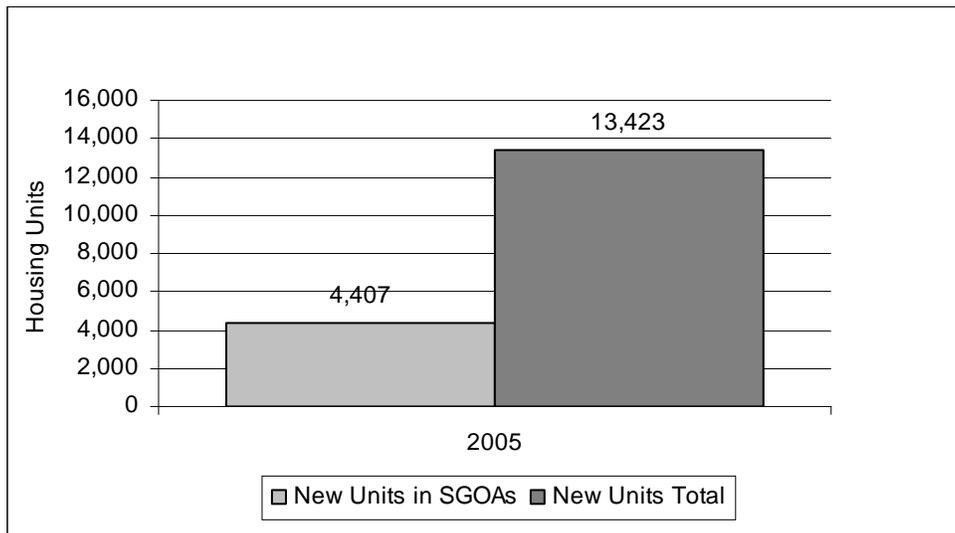
Increases in density in the region's Smart Growth Opportunity Areas, as compared to density in the region as a whole, can also signify success in incentivizing development in smart growth areas. Currently, such data is only available for 2004, but the increases can be monitored over time. In 2004, net residential density in Smart Growth Opportunity Areas totaled 26.6 dwelling units per residential acre, as compared to 3.5 dwelling units per acre in the region at large. Employment density in Smart Growth Opportunity Areas totaled 55.8 jobs per employment acre, as compared to 28.9 jobs per acre in the region at large.

**Table 2**  
**TOTAL HOUSING UNITS AND JOBS COMPARED TO HOUSING AND**  
**JOBS IN EXISTING AND PLANNED SMART GROWTH OPPORTUNITY AREAS**

Year	Total Housing Units	Housing Units in Smart Growth Areas	Total Jobs	Jobs in Smart Growth Areas
2004	1,095,077	157,725	1,449,349	368,162
2005	1,108,500	162,132		

Source: SANDAG Annual Population and Housing Estimates.

**Figure 1**  
**NEW HOUSING UNITS IN SMART GROWTH OPPORTUNITY AREAS COMPARED**  
**TO NEW HOUSING UNITS IN THE SAN DIEGO REGION (2005)**



Source: SANDAG Annual Population and Housing Estimates.

**Figure 2  
JOBS IN SMART GROWTH OPPORTUNITY AREAS  
COMPARED TO JOBS IN THE SAN DIEGO REGION (2004)**



Source: SANDAG Current Estimates Program.

## **2. Share of New Housing Units within County Water Authority Service Boundary**

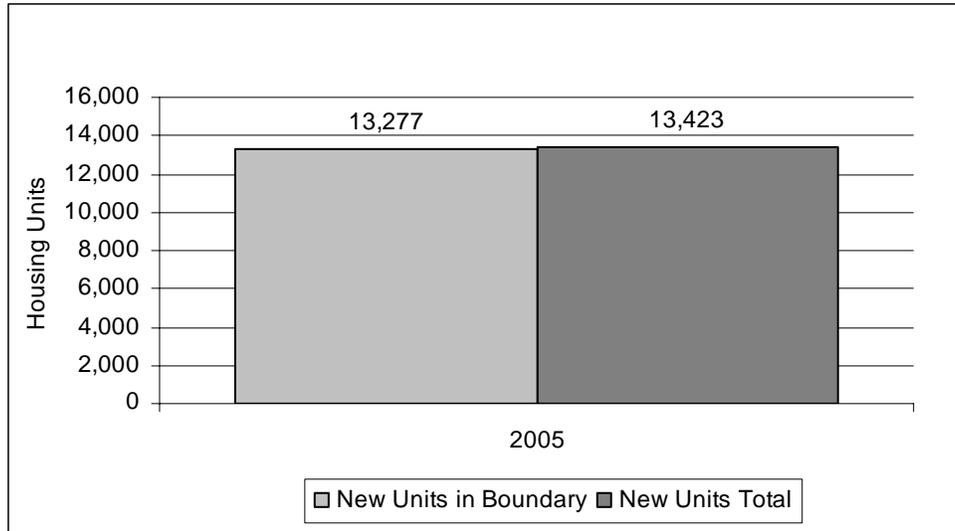
### ***Significance***

A primary goal of the RCP is to limit sprawl, especially into the backcountry. Specifically, the RCP recommends that the region focus future population and job growth away from rural areas and closer to existing and planned job centers and public facilities. The San Diego County Water Authority (Water Authority) service boundary serves as a useful distinction between existing urban/suburban areas and the backcountry.

### ***Findings***

Since the year 2000, approximately 99 percent of the region's new housing units were constructed within the Water Authority service boundary.

**Figure 3  
SAN DIEGO REGION NEW UNITS IN COUNTY WATER  
AUTHORITY SERVICE AREA COMPARED TO TOTAL NEW UNITS (2005)**



Source: SANDAG Current Estimates Program

### 3. Annual Transit Ridership

#### *Significance*

The RCP sets out an objective of developing a network of fast, convenient, high-quality transit services that is competitive with the cost and time of driving alone, especially during peak periods. Annual transit ridership will increase if this goal is met, and transit should, over time, play an increased role in addressing regional mobility needs. Increases in transit opportunities and transit use provide citizens with more transportation choices and greater mobility. The following data examine annual ridership trends between 1996 and 2005 as compared with growth rates in population and vehicle miles traveled (VMT).

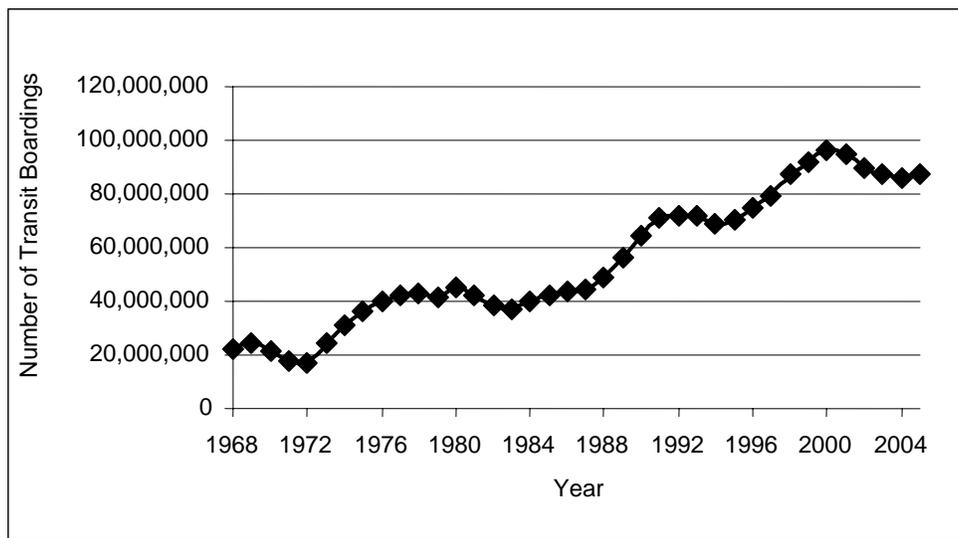
#### *Findings*

The trend in annual transit ridership since 1968 has been increasing. Between 1996 and 2005, annual transit ridership in the San Diego region increased from 74 million riders to nearly 88 million riders, representing an increase of 17 percent. While ridership declined somewhat between 2001 and 2004, the year 2005 reflects the first increase in ridership since 2001, suggesting that this trend may be reversing itself.

The growth in transit ridership outpaced growth in population; demonstrating that the role of transit in serving regional mobility needs has increased. This role may increase further in the future for several reasons:

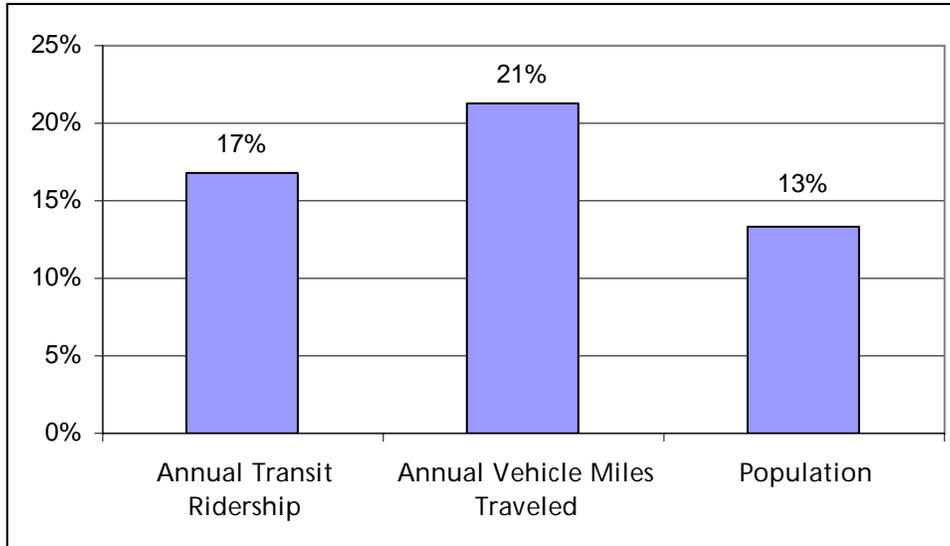
- The recent opening of the new Green Line trolley
- The future opening of the SPRINTER rail line
- System structural changes being made by both the Metropolitan Transit System and North County Transit District
- The increased attractiveness of transit in light of higher fuel prices
- The increased funding for transit over the long-term given the recent extension of the *TransNet* program, which will allow for significant capital infrastructure improvements for rail and bus services, and operating funds for new and expanded services, including Bus Rapid Transit

**Figure 4**  
**SAN DIEGO REGION ANNUAL TRANSIT BOARDINGS (1968-2004)**



*Source: Annual Boardings Data, Metropolitan Transit System and North County Transit District.*

**Figure 5  
GROWTH IN TRANSIT RIDERSHIP COMPARED TO VEHICLE MILES TRAVELED AND  
POPULATION IN THE SAN DIEGO REGION (1996-2003)**



*Sources: Metropolitan Transit System, North County Transit District, SANDAG.*

**Table 3  
GROWTH IN TRANSIT RIDERSHIP COMPARED TO GROWTH IN POPULATION  
AND VEHICLE MILES TRAVELED IN THE SAN DIEGO REGION (1996-2005)**

	<b>Annual Transit Ridership</b>	<b>Annual Vehicle Miles Traveled</b>	<b>Population</b>
<b>1996</b>	74,679,000	65,532,000	2,621,100
<b>1997</b>	78,047,377	67,354,000	2,653,400
<b>1998</b>	86,446,912	69,665,000	2,702,800
<b>1999</b>	90,582,180	71,984,000	2,751,000
<b>2000</b>	96,024,045	73,632,000	2,813,833
<b>2001</b>	95,128,745	75,795,000	2,863,657
<b>2002</b>	89,953,608	78,117,000	2,920,010
<b>2003</b>	87,224,915	79,442,000	2,971,805
<b>2004</b>	85,902,494	N/A	3,013,014
<b>2005</b>	87,770,419	N/A	3,051,280
<b>Change 1996-2003</b>	<b>+25,144,579</b>	<b>+13,910,000</b>	<b>+350,705</b>
<b>Percent Change 1996-2003</b>	<b>+17%</b>	<b>+21%</b>	<b>+13%</b>

*Sources: Metropolitan Transit System, North County Transit District, SANDAG.*

## 4. Commute Mode Shares

### *Significance*

Transportation goals in the RCP include providing a wide range of convenient, efficient, and safe travel choices, and reducing traffic congestion on freeways and arterials. Commute modes other than single-occupant private vehicles help reduce traffic congestion and air pollution and improve the efficiency of the transportation system by maximizing the person carrying capacity. Thus, commute mode shares are used as an indicator of success in providing a wide range of travel choices and reducing congestion.

Commute mode share data are currently unavailable at the corridor level on an annual basis, although this is expected to change. (See SANDAG Role discussion at the end of this Section.) However, regional data on mode share is available each year from the Census Bureau's American Community Survey (ACS).

### *Findings*

In terms of the commute to work, recent Census data for the 2004-2005 period<sup>1</sup> shows that the automobile continues to be the primary mode of travel in the region for about 89 percent of the home-to-work trips being made. It should be noted that this figure represents a typical means of travel to work and does not reflect activities such as carpooling or riding transit only once a week or occasionally. It should also be noted that the sample does not include people who live in group quarters, such as college dormitories, military quarters, and group homes. Such populations are presumably more likely to use transit or modes other than driving alone, so their exclusion from the survey may mean that the commute mode shares for transit (about 4%), walking (1.3%), and other means, such as bicycling (1.8%) may be understated. 4.2% worked at home.

The other consideration is that these figures only provide a general indication of how people are getting to work on a region-wide basis and do not reflect the effect transit has on commute travel in specific corridors where transit investments have been focused. There are significant differences in commute behavior between communities within the San Diego region. The role of transit is maximized in areas that have transit-supportive land use densities and urban design. For example, Downtown San Diego and City Heights in the Mid-City area are two areas that are well-served by transit. Accordingly, the 2000 Census found that they have transit commute mode shares of 20 percent and 11 percent, respectively. Conversely, areas that are not transit-supportive from a land use standpoint, such as Spring Valley or San Marcos, generate just a two percent transit commute mode share.

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<sup>1</sup> American Community Survey, U.S Census Bureau

## 5. Travel Times and Volumes for Key Auto and Key Transit Corridors

### *Significance and Future Reporting*

The RCP includes the goals of reducing traffic congestion on freeways and arterials, and developing a network of fast, convenient, high-quality transit services that are competitive with the time to drive alone during peak periods. Progress toward these goals can be measured by evaluating travel times and volumes for key auto and transit corridors.

Travel time and volume data on freeways will be provided by the Performance Measurement System (PeMS), a Web based system used for reporting and monitoring the performance of the freeway system. Freeway detector stations produce volume and lane occupancy information every 30 seconds. Once data is aggregated for each detector station, PeMS can apply algorithms to estimate a number of performance indicators.

The quality of transit related data for this indicator available at this time is somewhat limited. However, data sources for future monitoring reports are being investigated. Currently, travel time is available from transit schedules. Transit volume data are currently available from the SANDAG Regional Passenger Counting Program where transit ridership volumes are estimated for each transit route once a year. These data sources will likely be used in the near-term until a more sophisticated approach can be implemented.

## 6. Miles of Deficient Roads on Congestion Management Program Network

### *Significance*

The Congestion Management Program (CMP) network is a subset of the region's most heavily used arterial roadways and freeways, as shown in Map 1 (2006 CMP Roadway Network map).<sup>2</sup> The roads on the network are regularly monitored and rated to determine their Level of Service (LOS). Roadway LOS is a measure used to evaluate how well a roadway section or intersection operates. LOS is commonly described in letter form, ranging from LOS A (least congested) to LOS F (most congested). Peak hour levels of service in 2005 for all roads on the network are shown on Map 2 (2005 Peak Hour LOS map). Congested roadways and freeways (those designated with LOS F) are considered "deficient." The number of miles of deficient roads are key indicators to monitor the success of implementing MOBILITY 2030, the transportation component of the RCP. As traffic worsens, the number of deficient miles increases.

### *Findings*

When compared to prior years, congestion has stabilized on the region's freeways and conventional highways. Congestion fluctuated on the region's arterials between 2001 and 2005. Between 2001 and 2003, the number of deficient miles on the region's highways decreased slightly and remained the same in 2005. But the number of deficient miles increased considerably on arterials between 2001 and 2003, then decreased somewhat in 2005. Freeways also showed a slight increase in the number of deficient miles, followed by stabilization in 2005.

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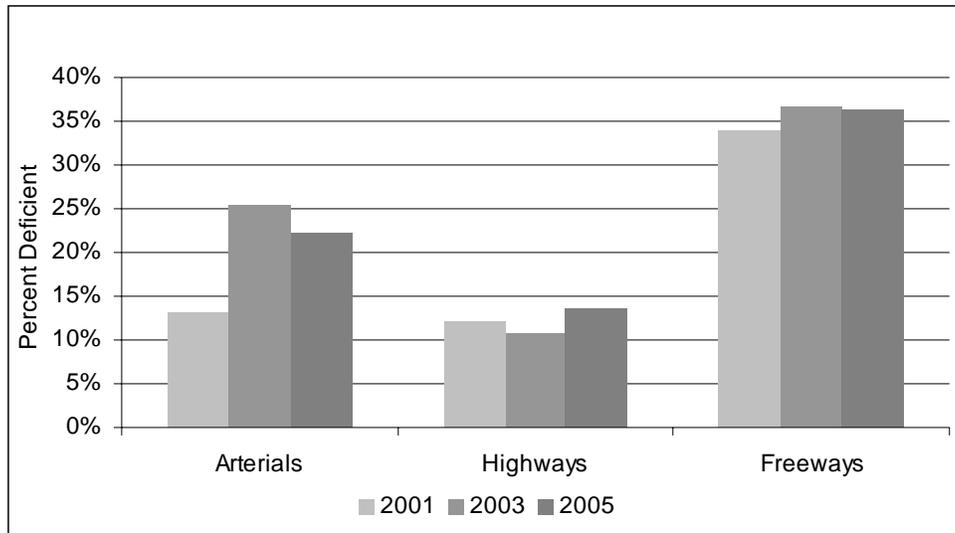
<sup>2</sup> Arterials, Freeways, Highways Defined:

Principal Arterials – Signalized streets that serve primarily through traffic and provide access to abutting properties as a secondary function. For example, Balboa Avenue from I-5 to I-15.

Freeways – Multilane divided roadways grade separated from other roadways, with full control access and egress. For example, Interstate 5.

Highways – State or federally-designated urban or rural routes, designed to accommodate longer trips in the region. For example, State Route 75.

**Figure 6**  
**PERCENT OF CMP NETWORK THAT IS DEFICIENT (2001, 2003, AND 2005)**



Source: SANDAG Congestion Management Program updates, 2002, 2004, 2006.

**Table 4**  
**PERCENT OF CMP NETWORK THAT IS DEFICIENT (2001, 2003, AND 2005)**

**Percent Deficient Roads**

Percent deficient is calculated from Miles Deficient and Total Miles.

**Percent Deficient Roads**

	Arterials	Highways	Freeways
2001	13%	12%	34%
2003	26%	11%	37%
2005	22%	14%	36%

**Miles of Deficient Roads**

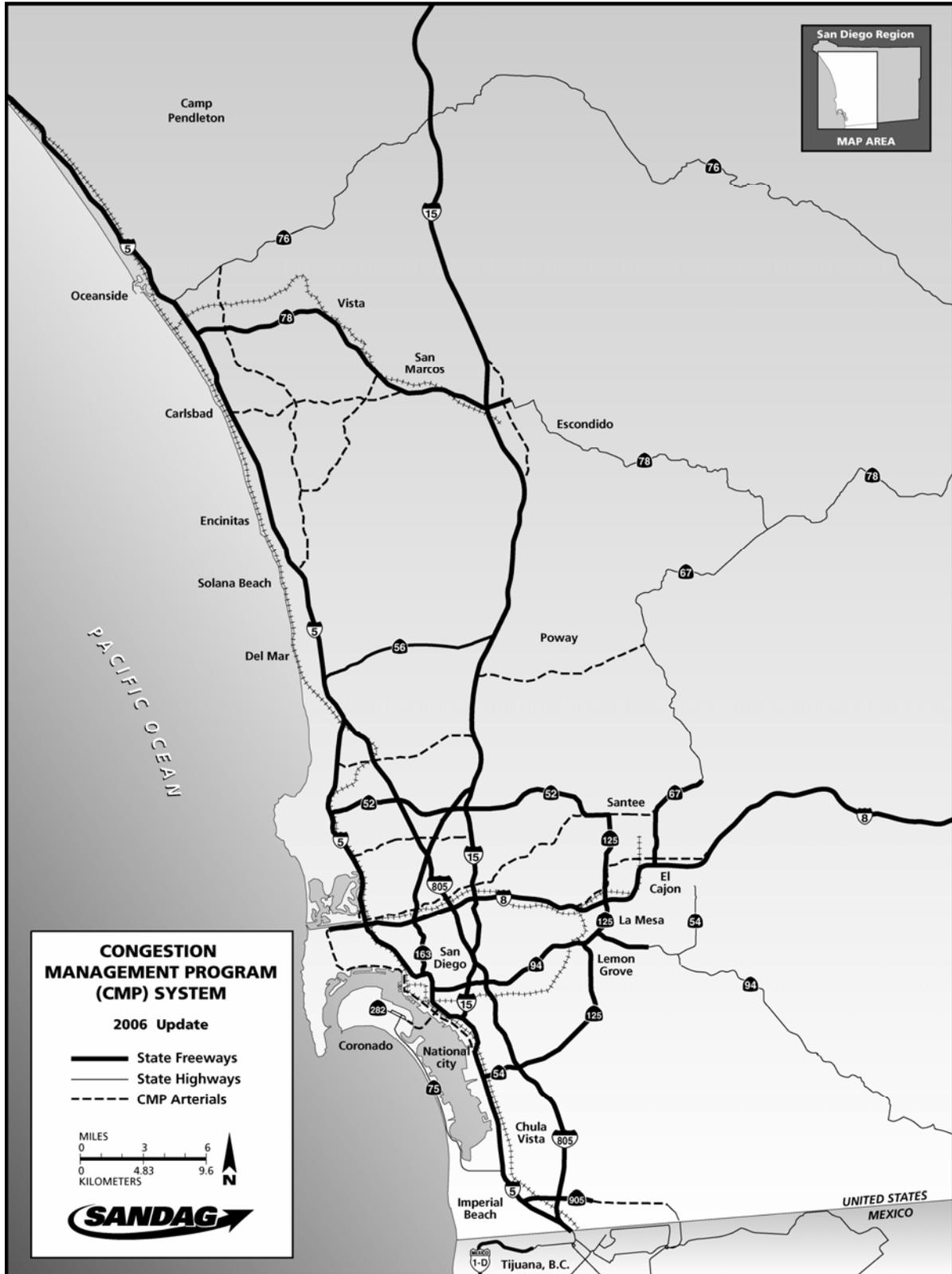
	Arterials	Highways	Freeways
2001	13	34	106
2003	25	30	118
2005	23	32	117

**Miles of Total Roads**

	Arterials	Highways	Freeways
2001	98	283	312
2003	98	283	323
2005	102	237	321

Source: SANDAG Congestion Management Program updates, 2002, 2004, 2006.

# Map 1 2006 CMP ROADWAY NETWORK



**Map 2**  
**2005 PEAK HOUR LEVEL OF SERVICE**



## 7. Annual Hours of Traffic Delay Per Traveler

### *Significance*

Annual hours of traffic delay per traveler is a key indicator for monitoring the success of implementing MOBILITY 2030, the transportation component of the RCP. Whereas average travel time during the peak period is a good measure of performance in individual corridors, annual hours of delay is a better overall regional indicator of the time residents spend in traffic each year – increased time spent in traffic typically corresponds to decreases in residents' productivity and quality of life, and an increase in air pollution. As traffic worsens, annual hours of delay increases.

This indicator could be viewed as not simply an indicator of congestion. The findings could also reflect the region's land use decisions regarding the location of jobs, housing, and retail establishments, as well as residents' choices regarding where to live, where to work, and where to shop. Presumably as smart growth is implemented, such decisions can help to reduce annual hours of traffic delay experienced by the region's residents.

### *Findings*

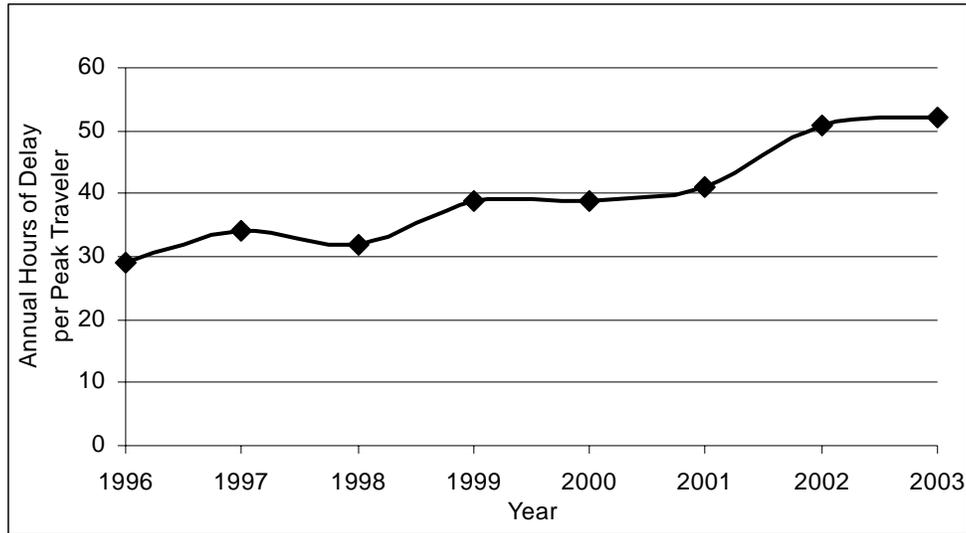
The region's residents are spending an increasing amount of time in traffic. Annual hours of traffic delay represents the extra travel time it takes travelers to complete a trip during peak periods (6 to 9 a.m. and 4 to 7 p.m.) as a result of congestion. Between 1996 and 2003, the region experienced a 79 percent increase in the average hours of traffic delay per traveler during peak periods.

Delay continues to grow as annual vehicle miles of travel (VMT) outpaces the growth in population, employment, and new highway miles. Major highway improvements that may have contributed to the slower growth of traffic delay in the years 1997 and 1999-2001 include the State Route 76 expressway in Oceanside, portions of State Route 125 north of Interstate 8, and State Route 15 south of Interstate 8. The recent completion of the Green Line trolley extension to San Diego State University, along with projects underway at the I-5/I-805/SR 56 interchange and in the I-15 may help to curb the upward trend in regional traffic delay.<sup>3</sup>

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<sup>3</sup> Annual Hours of Traffic Delay per traveler: To calculate "Annual Hours of Delay," Texas Transportation Institute estimates the daily vehicle hours delay per incident (delays that result from accidents or broken down vehicles) and recurring (predictable) conditions for both freeways and principal arterials. This is then multiplied by a factor of 250 (represents working days per year) and 1.25 (represents average persons per vehicle).

**Figure 7**  
**ANNUAL HOURS OF TRAFFIC DELAY PER TRAVELER DURING PEAK PERIODS (1996-2003)**



*Source: Annual Urban Mobility Study, Texas Transportation Institute.*

**Table 5**  
**ANNUAL HOURS OF TRAFFIC DELAY PER TRAVELER DURING PEAK PERIODS (1996-2003)**

<b>Hours of Traffic Delay</b>	
1996	29
1997	34
1998	32
1999	39
2000	39
2001	41
2002	51
2003	52

*Source: Annual Urban Mobility Study, Texas Transportation Institute.*

## 8. Regional Crime Rate

### *Significance*

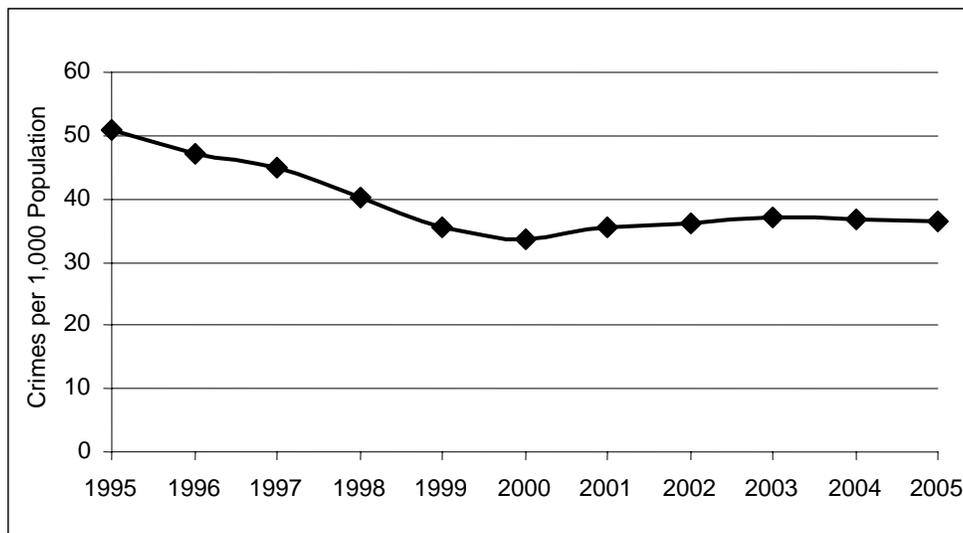
One goal of the RCP is to create safe, healthy, walkable, and vibrant communities. The regional crime rate, as measured by Federal Bureau of Investigation (FBI) Index Crimes, is one way to measure safety. FBI Index Crimes include homicide, rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft.

## Findings

Crime in the region decreased significantly between 1995 and 1999, and has remained relatively constant since 1999. Some explanation for this trend can be found in the SANDAG Criminal Justice Research Division April 2006 report entitled *Twenty-Five Years of Crime in the San Diego Region: 1981 through 2005*:

*“A number of theories have been provided regarding possible factors related to this overall drop in crime, including declining numbers of young males in high crime-associated age groups, legislation which increased jail and prison time for violent offenses, economic factors, and the implementation of effective crime prevention programs.”*

**Figure 8**  
**FBI INDEX CRIMES PER 1,000 POPULATION (1995-2005)**



Source: SANDAG Criminal Justice Research Division (data provided by local law enforcement agencies).

## URBAN FORM AND TRANSPORTATION SUMMARY

### Conclusions

It is promising that one-third of the new housing units built in 2005 were in Smart Growth Opportunity Areas, and that 99 percent of the region's housing stock is located within the Water Authority service area. Transit ridership has fluctuated, but the general trend over the last decade is upward. In some areas, as much as 20 percent of commute trips are made by transit. However, traffic congestion on most of our roads and freeways has increased over the last 10 years, as have total hours of travel delay. Crime has declined significantly.

## **Future Target Setting**

Currently no targets have been set for this group of indicators. Targets may be developed in the future for some or all of the indicators as a result of discussions among local elected officials, stakeholders, and SANDAG staff. The Independent Transit Planning Review panel has recommended that commute mode share targets be set for defined corridors. SANDAG has identified a preliminary set of key transportation corridors that will be used to monitor mode share and other transportation related performance indicators.

## **SANDAG Role**

As the region's transportation planning agency, SANDAG plays many roles with regard to the regional transportation goals laid out in the RCP. Here is a list of some of the pertinent programs and projects. More detailed information is available from the SANDAG public information office and Web site.

### ***2007 Regional Transportation Plan***

The Regional Transportation Plan (RTP) will next be updated in 2007. One of the purposes of the RTP is to better connect our freeway, transit, and road networks to our homes, schools, work, shopping, and other activities. The 2007 Regional Transportation Plan will build upon MOBILITY 2030, the RTP adopted in 2003, as well as the 2006 RTP Update and Supplemental Environmental Impact Report. The 2007 RTP will continue to strengthen the land use transportation connection and offer regional transportation funding incentives to jurisdictions that support smarter, more sustainable land use.

As an input to the 2007 RTP, an Independent Transit Planning Review (ITPR) was designed to provide an independent assessment of the transit plan contained in the 2030 Mobility Plan. A peer review panel, made up of transit planning, transit operations, and land use experts from around North America, helped guide the study process and work of a technical consultant. In addition to providing recommendations on the transit plan and project corridors, they also discussed the need for increased coordination of SANDAG Smart Growth initiatives and overall RCP goals with transportation planning. Recommendations contained in the final report prepared by the peer review panel and consultant will serve as input into the 2007 comprehensive update of the RTP.

### ***Smart Growth Concept Map***

The draft Smart Growth Concept Map lays out almost 200 existing, planned, or potential smart growth locations that have been identified by the 18 cities and the County of San Diego as Smart Growth Opportunity Areas. The Map will provide a framework for such programs as the *TransNet* Smart Growth Incentive Program, and recommendations that will be included in the 2007 RTP. The final map will be approved in 2007.

### ***Pilot Smart Growth Incentive Program and the TransNet Smart Growth Incentive Program***

The Pilot Smart Growth Incentive Program awarded \$19 million of federal Transportation Enhancement funds to projects throughout the region that integrate smart growth land uses and transportation facilities. Lessons learned from the Pilot Program will guide the design of the *TransNet* Smart Growth Incentive Program, which will fund \$7 million in projects each year beginning in 2009.

### ***Urban Design Guidelines***

SANDAG is preparing Smart Growth Urban Design Guidelines that will provide guidance to local governments, planners, developers, community members, and others in defining smart growth development principles.

### ***Congestion Management Program***

The Congestion Management Program (CMP) provides innovative options for managing our region's traffic congestion now and into the future. The CMP addresses both current and future congestion, giving jurisdictions options for implementing innovative and preventive congestion management strategies. The CMP addresses congestion through monitoring of our region's roadway system, evaluation and mitigation of the impacts of new major developments on the CMP system, Deficiency Plans that include recommendations for improving a roadway's performance, and alternative strategies such as better project design to encourage transit use and walking, or the establishment of carpool or vanpool programs, among others. The CMP also recommends programs to encourage bicycling and walking through Ridelink.

### ***Other Projects and Programs***

SANDAG also oversees the planning and development of key transportation projects and programs that may impact mode share, travel times, and traffic congestion over time. Some examples are:

- The Interstate 15 Managed Lanes/Bus Rapid Transit will create a 20-mile Managed Lanes facility in the median of Interstate 15 between State Route 163 and State Route 78 designed to provide priority access for transit, carpooling, and *FasTrak*.
- The Mid-Coast Transit Corridor project will connect with trolley service from the Old Town Transit Center to the University of California, San Diego (UCSD) and University Towne Centre areas.
- The 22-mile Sprinter rail project will link the downtown areas of four rapidly growing North County cities: Oceanside, Vista, San Marcos, and Escondido.
- Evaluating the use of freeway shoulder lanes for buses in times of congestion based upon what is learned in the one-year demonstration project that allow buses on MTS Route 960

to use the freeway shoulder from Interstate 805 and Nobel Drive to State Route 52 and Kearny Villa Road during morning and evening rush hours.

- *Ridelink* coordinates a number of free commuter services to San Diego region residents to promote alternatives to driving alone to work or school.
- Implementing selected recommendations from the Independent Transit Planning Review including evaluating alternative approaches for monitoring the transit mode share in key transportation corridors to accurately measure return on transit investments.
- \$19 million in *TransNet* funding has been allocated towards Regional Bicycle Projects and Walkable Communities. Projects are ongoing to provide access to transit, build additional bikeways, and expand the entire network for safe and convenient bicycle travel. Making the streets more pedestrian-friendly is another SANDAG goal, which the Walkable Communities program seeks to achieve. This demonstration program will show how walkable communities benefit neighborhoods, increase pedestrian safety, and contribute to smart growth planning.