



2012

San Diego County Infrastructure Report Card

ASCE
AMERICAN SOCIETY
OF CIVIL ENGINEERS



About ASCE and the San Diego Section

The American Society of Civil Engineers (ASCE) enhances the welfare of humanity by advancing the science and profession of civil engineering. Simply stated, civil engineers are creative, people-serving and problem-solving leaders who make our lives easier to live from one day to the next.

Founded in 1852, the American Society of Civil Engineers represents more than 140,000 civil engineers worldwide and is America's oldest national engineering society. For more information, visit www.asce.org.

The ASCE offers continuing education courses and technical specialty conferences; develops technical codes and standards for safer buildings, water systems, and other civil engineering works; publishes technical and professional journals, manuals, and a variety of books; works closely with the United States Congress, the White House, and federal agencies to build sound national policy on infrastructure and engineering issues; and supports research of new civil engineering technology and materials.

The local San Diego County Section of ASCE was formed in 1915. The Section has more than 2,000 members, publishes a local newsletter, and meets on a monthly basis. For information on the San Diego County Section activities, please visit www.asce-sd.org or call 619.588.0641.

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Message from the San Diego Report Card Team

Dear Friends and Colleagues,

San Diego County's infrastructure is critical to the health of our communities and our quality of life. Our existing infrastructure is aging across the board. For decades our infrastructure has constantly competed for financial resources to sustain our communities. San Diego County mirrors our nation, as we all race against time, to keep up with the need for, and expansion of, lifeline infrastructure.

The San Diego Section released its first comprehensive Report Card in 2004. The Section then updated its 2005 Report Card to be part of the *2006 ASCE California Infrastructure Report Card*. Comparing the 2005 San Diego County to the 2006 California statewide Report Card indicated that San Diego County infrastructure was rated slightly higher across most categories. Even so, the powerful message remains the same. Our critical lifeline infrastructure is not immune to the effects of deterioration and is still in need of improvement and expansion in order to survive growing demands from our communities.

Last year, we began a process of updating our Report Card. We gathered industry professionals, to complete the 2012 Report Card. Aviation, Solid Waste, and Bridges have been added as important elements of our infrastructure. Since the 2005 Report Card, some categories are now rated higher, with some rated lower, and three categories rated significantly lower. Overall, the vital message remains the same. Our communities can only thrive if their infrastructure needs are met, and infrastructure improvements are very much needed.

Periodic updating of the Report Card is only a first step in highlighting the importance of infrastructure construction and maintenance. As you will read in this Report Card, San Diego's grades are still not acceptable. In fact, the 2012 overall rating is actually slightly worse than that of 2005. There remains substantial work to be done across the county and across all categories to improve the grades and maintain our quality of life in San Diego County. The current economic climate and a forecast for questionable future economic growth threaten our ability to maintain working infrastructure, making the next 20 years essential. We cannot allow the infrastructure we need for goods movement, commerce, and the health and safety of our existing communities to deteriorate. Not only would such deterioration threaten the well being of the region, but costs are much higher to replace and repair infrastructure that has not been preventatively maintained.

No matter what the economic conditions are, it is the responsibility of our engineering and industry community, as well as every elected official and citizen, to understand and work towards improvement of our critical infrastructure. It is imperative to educate the public on the significance of infrastructure maintenance. Encouraging our colleagues in the public sector to continue to seek infrastructure funding and actively communicate to our elected officials the critical role that infrastructure plays in our lives are the first and foremost steps to success and continued growth of our communities. The importance of infrastructure in our lives cannot be underrated. It is the key to our quality of life and healthy communities.

Sincerely,



Dean Gipson, PE
President, ASCE San Diego Section



Patricia McColl, PE
Past President



Lawrence Pierce, PE
Report Card Team Chair

Introduction

San Diego County's Infrastructure – What does the future hold for what we take for granted?

San Diego is California's second largest city and the United States' eighth largest city. San Diego boasts a citywide population of nearly 1.3 million residents and more than 3 million residents countywide. Within its borders of 4,200 square miles, San Diego County encompasses 18 incorporated cities and numerous other charming neighborhoods and communities. San Diego is renowned for its idyllic climate and 70 miles of pristine beaches and is truly a remarkable place.

Most of us expect our infrastructure to perform without missing a beat and provide us with uninterrupted service forever. In fact, many of us take for granted how the public infrastructure facilities around us support the health of our communities and our quality of life and make possible everything we do.

It starts with our morning visit to our bathrooms and showers and our morning cup of coffee. All of it depends upon a reliable water supply, wastewater collection/treatment systems, and electricity delivery systems, which provide our homes with the necessities of life, with little thought by us. It continues with our drive to the store or work, the bus rides across town, the airline flights and rail commutes to places we visit, all of which are made possible by ground transportation and airport systems that are well planned, well maintained, and better funded than most. Yet, as our communities grow, congestion slows us down, wastes our time and fuel. When we buy a product that was shipped here from some place in the world, it comes through our ports of entry and over the highways and bridges of our highway systems. San Diego is famous for its mild winters. Although some of those winters bring us intense storms with needed rain, they pass over us with little threat of flooding or property damage because of our storm water collection and treatment systems. We do not even think about the thousands of tons of trash and recyclables our families and businesses produce every day that are safely and reliably carried away for management and disposal at multiple sites inside the County by an extraordinarily complex system of public agencies and private companies. Every time we use one of the multitude of our recreational facilities—beaches, bays, harbors, waterways, lakes, reservoirs, parks, and parkways—we forget they are managed by city and county agencies that provide people and resources necessary to keep them clean, safe, secure, and well-maintained. Our public school facilities that have given us endless opportunities for education are planned, built, and maintained by school districts that provide a place for learning and growth, and yet some of our schools are in need of funding for routine and major maintenance.

As you can see, what we take for granted really supports the health of our communities and our quality of life and makes possible everything we do. It is essential that we respond now to prevent our public infrastructure facilities from deteriorating further and jeopardizing our way of life.

How is San Diego Doing?

While these infrastructure systems are not perfect, as a measure against the previous National, State and County Report Cards, San Diego County is doing better than most and, in fact, improving in many areas. The 2012 San Diego County Report Card earned an average grade of C compared to the 2005 San Diego County Report Card average grade of C+. By Contrast, the National ASCE 2009 Report Card graded the nation's infrastructure as a D. The State of California's 2012 grading for the entire state was a C.

How Does San Diego Compare to California?

As we step back and assess how well San Diego County compares to the rest of California, we find that almost all infrastructure categories in San Diego County are rated higher. The overall grading for the state of California in 2012 was a C. It is also important to understand that the infrastructure grade for the state would be even lower if it were not for the improved grades that San Diego County brings to the overall state grading.

Some of the reasons for the slightly higher grading in San Diego County could be attributed to the fact that San Diego County is the center of the third largest metropolitan area in the state. As the third largest concentration of population in the state, there tends to be a larger need and subsequent investment in the infrastructure systems than that of the majority of rural areas of the state. Also, San Diego County development has always been trailing the metropolitan areas of Los Angeles and San Francisco. Therefore, our infrastructure tends to be more recent and may have a greater capacity for future needs. However, many areas of San Diego County infrastructure systems are approaching, if not past, their 50-year life expectancy and are now in need of replacement or rehabilitation.

In addition, we have seen several new statewide regulations that help improve our infrastructure systems, as a result we see several infrastructure systems—water supply, wastewater collection and treatment, and solid waste—that are well-positioned and in good shape because of long-term investment and increased regulations.

How Does San Diego Compare to the Nation?

The San Diego County grade is higher than the National ASCE 2009 Report Card grade D for the nation's infrastructure.

San Diego County's infrastructure is performing better than most of the nation for many reasons. First, Southern California for the most part does not experience the severe freeze-thaw winter weather cycles that cause infrastructure to more rapidly wear and age. Secondly, much of the infrastructure in San Diego County is simply newer than what is found in the midwest and east coast states. Third, California, and more specifically San

Diego County, have been willing to provide locally-generated funding for the construction or replacement of some of our infrastructure systems. Passage of several self-imposed half-cent sales tax measures by our local communities is an indication that San Diego County is willing to pay for needed infrastructure projects.

Local and regional infrastructure programs managed by local decision-makers are most likely to be the most responsive and relevant to the needs of the communities they serve. But in order to have a competent and sustainable public infrastructure, there are several key elements needed to make that a reality: thoughtful long-term planning, adequately designed systems, durably constructed facilities, proactive maintenance, and reliable funding sources. What are difficult to manage are the infrastructure programs that require multiple layers of decision-makers or remotely located decision-makers. This is not to imply that statewide or national programs and standards are not important. Frequently, once these programs and standards are placed into the mix of variables, creative and discretionary decision making by local agencies in San Diego County can be made in a timely and focused manner.

Grading Criteria and Methodology

Infrastructure grading follows the traditional academic grading scale of "A" to "F." The fundamental components are not weighted. Experts in the subject areas have determined grades based on a particular plus or minus range in any of the particular components.

A	=	90 - 100%
B	=	80 - 89%
C	=	70 - 79%
D	=	50 - 69%
F	=	0 - 49%

Methodology used in determining the grade for each infrastructure category

Step 1: Existing Adequacy: Each committee rated the existing adequacy of the infrastructure for the next 5 years considering the following components:

- Capacity: Ability to meet current demands
- Condition: Physical condition, state of readiness, and reliability
- Operations & Maintenance: Level of operations, maintenance plans, and plans for replacement
- Public Safety: Safeguards for the consequences of failure
- Funding: Current level of funding and required level of funding for the next 5 years

Each component received a numerical score using the following criteria:

- 0 = Poor (not adequate)
- 3 = Fair (needs improvement)
- 5 = Good (adequate)

Step 2: Future Adequacy: The committees rated the adequacy of each of the following components' ability to meet future demands, 6-20 years, based on the following criteria:

- Capacity: Ability to meet future demands
 - 0 points are awarded if no long-term plan identifying the future needs exist
 - 3 points are awarded if Capital Improvement Plans (CIP) by local agencies are in place, because of the short-term and limited details of these plans
 - 5 points are awarded, if long-term plans are identified and in place to meet future requirements
- Condition: Expected physical condition, lifespan, and reliability
- Operations & Maintenance: Level of operations, maintenance plans, and plans for replacement
- Public Safety: Safeguards for the consequences of failure
- Funding: Level of future funding for 6-20 years out
 - 0 points are awarded, if no long-term funding plan could be identified
 - 3 points are awarded, if long-term funding is identified, but not adequate to meet the required funding needs
 - 5 points are awarded, if long-term funding was identified and in place to meet future requirements

Each component received a numerical score using the following criteria, except as noted for the Capacity and Funding components:

- 0 = Poor (not adequate)
- 3 = Fair (needs improvement)
- 5 = Good (adequate)

Step 3: Total Score and Grading: Committees next totaled the scores for each component, and then added the section scores for a Total Individual Category Score. Each committee decided whether to average all of the Individual Category Scores or total all the Individual Category Scores and apply Criteria Score/Grade.

The table on the following page translates the Total Individual Category Score to a Grade. The category Grade assumes an equal weight for each component.

<u>Criteria Score</u>	<u>Total Individual Category Score</u>	<u>Grade</u>
90-100%	45 to 50	A
80-89%	40 to 44	B
70-79%	35 to 39	C
50-69%	25 to 34	D
0-49%	0 to 24	F

EXAMPLE:**Existing Adequacy** (Max. score 25 points)

- Capacity Fair - 3
- Condition Fair - 3
- Operations & Maintenance Good - 5
- Public Safety Good - 5
- Funding Fair - 3

Existing Adequacy Score = 19

Future Adequacy (Max. score 25 points)

- Capacity Fair - 3
- Condition Fair - 3
- Operations & Maintenance Good - 5
- Public Safety Good - 5
- Funding Fair - 3

Future Adequacy Score = 19

Combined Existing and Future Adequacy Scores = 38

Individual Infrastructure Grade is C

Grading Our Public Infrastructure

Starting in early 2010, then current President of the San Diego Section of ASCE, Patricia McColl, led an effort to establish a leadership team for the purpose of updating the Section's 2005 Infrastructure Report Card for the incorporated and unincorporated areas of San Diego County. The leadership team selected a Chair to be part of the leadership team and to lead the working teams. There were 11 working teams of infrastructure experts employed by public agencies and consulting firms to assemble data, analyze the data, and prepare reports on 11 infrastructure categories. Each working team selected Peer Reviewer(s) who are experts in each infrastructure industry to review the reports, provide input, and assist the committee in grading each category of infrastructure.

There were three new categories added from the 2005 Report Card – Aviation, Solid Waste, and Bridges. In addition, Wastewater Systems was divided into two categories, Collection System and Treatment.

The Report Card on the following pages has been updated and shows how public infrastructure in San Diego County measures up. The results for 2012 and the grades from the prior years are shown here.

Who and How Do We Pay for Our Infrastructure?

First of all, we need to understand that our public infrastructure is a public asset, whether it is owned by a city, county, special district, airport authority, port authority, or the federal government. Second, we all have a stake in its upkeep, operation, and replacement for future generation use, and we all share in the expense of construction and maintenance.

Sometimes infrastructure is paid for by those who actually use it most through tolls, utility bills, user fees, or proportional taxes paid on gasoline and airline tickets. But because infrastructure improvements affect us all by supporting our economy and providing fundamental community services, a portion of the cost is borne by general tax revenue derived from property tax, sales tax, and income tax.

2012		
San Diego County		
Report Card		
	2005	2012
Aviation	-	C+
Bridges	-	C+
Land and Sea Ports of Entry	C	C-
Levees/Flood Control/Urban Drainage	C-	C-
Parks/Recreation/Environment	B-	C
School Facilities	C+	C
Solid Waste	-	B
Surface Transportation	C	D+
Wastewater/Collection Systems	C+	B
Wastewater/Treatment	B	B+
Water	B	B

For years, federal and state government played a large role in collecting and distributing funds for large-scale infrastructure improvements. Increasingly, with the budgetary woes of federal and state governments, more of the cost is being borne by local governments, special districts, and by private enterprise. To some degree this shift to local funding causes a beneficial effect: local decision-making accompanies local funding. When this happens, local needs can be addressed with more accuracy and more accountability. But, unfortunately, we take on deteriorated infrastructure systems that are in need of upgrading and replacement, at the same time we take on more of a funding burden as the tax dollars we send to the state and federal governments are not finding their way back to the local communities.

In recent years, due to the reduction of available tax monies, state and local governments have had to resort to selling Public Works Bonds in order to upgrade and replace the existing infrastructure systems. These Public Works Bonds have to be paid for over long periods of time with interest. As a result, tolls, utility bills, user fees, capacity fees, etc., all need to be increased to cover the monthly bond payments. So, not only do we have to pay for the cost of design and construction of the improvements, interest also has to be paid on the bond, thereby further increasing our costs for the privilege of using the infrastructure systems. The current trend in financing infrastructure improvements will most likely continue as the main method of financing public infrastructure, due to the lack of available local monies. This current trend then makes the sale of Public Works Bonds an extremely important way of sustaining our local infrastructure.

What Needs the Most Attention?

San Diego County has found four major areas that need most of our attention:

- Land and Sea Ports of Entry
- Levees/Flood Control/Urban Drainage
- Parks/Recreation/Environment
- Surface Transportation

Land and Sea Ports of Entry – Grade C-

The San Diego area has three land ports of entry on the U.S./Mexico border. Trade, commerce, and goods movement account for billions of dollars of economic growth in the San Diego region. The region is failing at the land ports of entry with border system efficiency. This is because of added procedures and processing times that may be “efficient” for a solitary purpose, but when multiple purposes and multiple institutions layer on their procedures the net effect is unacceptable delays and traffic congestion, generating huge economic costs and losses to the region. Continued investment in land of entry is essential to the region’s economic growth.

The other port of entry is the three San Diego civilian sea ports of entry in San Diego Bay that include the Tenth Avenue Marine Terminal, the National City Marine Terminal, and the B Street Cruise Ship Terminal. The capacities at all of these facilities are affected by the physical limitations of each port of entry. Each of the San Diego civilian sea ports is impacted by site constraints, incompatible surrounding land uses, and local street networks. The supporting infrastructure for Tenth Avenue Marine Terminal and National City Marine Terminal are in need of improvement to efficiently meet current needs.

Levees/Flood Control/Urban Drainage – Grade C-

As our metropolitan areas continue to grow and expand, the challenge to continuously upgrade, repair and maintain levees, flood control, and urban drainage systems becomes daunting at best but are absolutely essential to public safety. This challenge has been exacerbated by the ongoing economic downturn and the lack of state and federal funding for these critical and sometimes large-scale infrastructure projects. The local levees, flood control systems, and urban drainage facilities are aging and in some areas do not meet the current standards. The age of these infrastructures are increasingly impacting the abilities of jurisdictions to keep pace with maintenance efforts. The problem is further compounded with the ever increasing environmental regulations, including additional mitigation for ongoing maintenance of flood control facilities that in turn increases costs and forces jurisdictions to reduce the amount of systems annually maintained. Municipalities cannot keep pace with these impacts and are losing further ground in the ongoing efforts to manage existing infrastructure. If the current trend in funding for levees, flood control facilities, and urban drainage systems continues, the region could face a deficiency in excess of \$1 billion in the next 20 years.

Parks/Recreation/Environment – Grade C

Between 2005 and 2008, there were improvements in many parks throughout the region and the necessary maintenance was completed. However, since 2008 the declining revenue from taxes, grants, and the rejection of Proposition 21 by voters, left a \$500 million a year deficit for operating, maintaining, and repairing 278 state parks and wildlife conservation areas. Without the continuous funding from taxes or bonds, many park amenities and facilities have outlived their economic life and the needed replacement or renovation of infrastructure cannot be met. The state backlog of park repairs is in excess of \$1 billion, and this amount will only increase without sufficient investment of capital funding. Given the ongoing depressed economic condition at the state, federal, and local levels, and its negative impact on parks, the overall grade declined from a B- to a C between 2005 and 2012.

Surface Transportation – Grade D+

Although the traffic congestion in the region has decreased since 2005 as a result of poor economic conditions and completion of key improvements to our highway system, in the last year traffic congestion has increased as the economy begins to recover. The

highway and transit systems have been well planned as outlined in San Diego Association of Governments (SANDAG) Regional Transportation Plan 2050 to meet the future needs of the San Diego region over the next 40 years. In addition, the planned expansion of the transit system, including light rail, commuter rail, and rapid bus service, are key components in meeting future transportation demands and maintaining San Diego's quality of life. The current TransNet program will provide consistent local funding for these planned projects. The main reason that the Surface Transportation overall grade is a D+ is primarily due to the assumption that the planned improvements are based on a 45% contribution from state and federal sources. Based on the current economic conditions and the projections for future state and federal funding sources, this assumption may be over optimistic at best because the current Surface Transportation funding at the federal level has not passed, and California's budget issues may not allow the state to pick up additional federal funding. We already see the effects of reduced funding with our local roadways not being well maintained, the condition of our highways starting to deteriorate, and transit service being cut due to lack of funding. Secure reliable funding sources for highway and transit facilities are absolutely needed to meet future demands and new sources of local funding are needed to operate, maintain, and repair our road, highway, and transit system.

What You Can Do

Reading this Infrastructure Report Card may lead you to start asking what you can do and what is your role in this very complex world of things that are mostly unseen, but are expected to be in place every time you need them.

- Become an informed citizen by improving your understanding of the public infrastructure issues that threaten the quality of life here in San Diego County, in the State of California, and in our Nation.
- Stay informed, form your own opinion, and regularly express your opinion to the policy makers and regulators who influence the infrastructure you rely on each and every day.
- Take advantage of the printed and electronic media that surrounds all of us.
- Subscribe to online news sites, newsletters, blogs, and your local newspaper.
- Keep abreast of the major issues being discussed and considered by your local agencies, and county and state representatives. Let them know what you think.

Support well thought out fee increases and bond programs that are proposed for public infrastructure improvements, replacements, maintenance, and operations. Just like everything we own ourselves, the reality is that all infrastructure wears out, becomes obsolete, or needs to be bigger to meet the current needs. Think of the vehicles, appliances, and electronic devices we own and use every day. All segments of public infrastructure are just like our homes, they require regular attention, maintenance, and

replacement as time goes by. If we ignore it, the quality of life that we enjoy here in San Diego County will diminish. Without funding to maintain our infrastructure – water, sewer, roads, electricity, transportation, and other necessities of our daily life may not be there at the moment we need it, or at the quality level we have come to expect.

As each of us are residents of this planet, the single most important action we can take every day is conservation and reuse of our resources. This extends to all parts of our daily lives—at home, at work, and in our travels. There are always opportunities to minimize waste and to recycle what you use to reduce our impact on the planet.

Understanding Public Infrastructure Politics

Infrastructure is a interwoven network of public works facilities that include airports, bridges, ports, drainage systems, parks, schools, solid waste disposal, transportation systems, sewer collection and treatment, dams and water systems, and utilities. The laws, rules, and practices governing its planning, financing, construction, and maintenance are complicated and multi-layered. Whether you are interested in shortening your daily commute, encouraging new business to your community, ensuring you do not get flooded out with the next storm, or protecting the environment for your children, gaining a better understanding of the issues that surround public works infrastructure is the first step towards becoming an advocate for your community and its infrastructure resources.

The following are topics that are important to consider as you read this Report Card:

Infrastructure is a political topic—be an informed citizen.

Elected public officials are besieged with tough decisions when there are strong voices of support and opposition for their actions. In order to educate elected public officials about infrastructure needs in your community, you must understand what those needs are and the impacts of those needs. Becoming informed and understanding all aspects of an infrastructure project will help you present options and build consensus among the numerous parties involved or affected by a project.

Think long-term community solutions.

Caring for, maintaining, replacing, and building infrastructure is an ambitious goal. Most projects cannot be achieved overnight. Moreover, the infrastructure facilities—airports, treatment plants, roads, bridges, pipelines, pump stations, and numerous other facilities—built today must be planned and built to serve people for decades to come. This makes comprehensive planning and long-term investment strategies absolutely necessary for key decisions about infrastructure.

Consider all of the factors influencing infrastructure decisions.

Most infrastructure projects are influenced by numerous factors and competing interests.

Consider the transportation corridor improvements that may have to displace existing property owners or impact existing habitat in order to provide the needed improvements; or the construction of public buildings that may increase traffic in some areas; or the installation of a new water or wastewater facility that may require new pipelines through neighborhoods. All impacts must be considered, understood, and addressed in order to make an informed policy decision.

Look at the big picture.

Remember that there are broader community benefits that must be placed above the immediate individual benefits gained from any infrastructure improvements. For example, even though you may not personally use the new freeway or mass transit system, its planning, funding, and construction will reduce traffic congestion on surrounding local roads and highways with the end benefit of increasing nearby property values, supporting local businesses, and tourism.

Do more with less.

Our infrastructure problems cannot be solved solely with money. Solutions to our urban problems, such as traffic congestion and recycled water, require new technologies, approaches, and our personal involvement. Research can help identify new efficient designs as well as longer lasting and maintenance-free materials to do things we may have only dreamed about a few years ago. We can also change our behavior by recycling, telecommuting, using mass transit systems, accepting the use of recycled water, and conserving our use of water, as just a few examples for reducing the demand on our infrastructure.

Consider the importance of preserving our environment.

We must balance environmental and economic goals with the use of our planet's resources. Land use and transportation patterns designed to foster economic growth, personal mobility, and to reduce our impact on the environment, can be developed in harmony with environmental benefits, such as expanded habitat and conservation areas.

Continue to demand timely maintenance of our infrastructure.

If we are going to continue to depend on our infrastructure facilities they need to be kept in sound condition. Our transportation systems, water systems, sewer systems, flood control facilities, airports, schools, parks, ports, and our waste disposal facilities must be supported to the level of service they are designed to handle. We need regular maintenance that prolongs the use and minimizes the need for costly emergency repairs and replacement. The money saved by thoughtful and timely maintenance can be used to fund other necessary community priorities.

Report Card Summary

C+ | Aviation

This grade represents the overall condition of our local aviation infrastructure. However, there are many issues beyond rusty nuts and bolts that threaten the infrastructure of the national air transportation system. Aside from daily challenges to obtain funding for infrastructure improvements, some of the greatest threats stem from capacity constraints due to increased daily loads, community encroachment, escalating regulatory requirements, increasing environmental demands/constraints and political pressures contrary to the interest of airports. This overall grade attempts to consider all of these factors.

C+ | Bridges

Today, only 19% of the bridges are in need of major rehabilitation or replacement; however, the average age of our County's bridge inventory is approaching 41 years and by 2020, a majority of the bridges in San Diego County will be beyond their expected design life. Further, the Highway Bridge Program (HBP), which is the major funding source for bridge maintenance, rehabilitation and replacement, is tied to the uncertain Federal Transportation Act re-authorization and inadequate gas tax revenue. As with most of our infrastructure, available funding for regular maintenance and long term rehabilitation and replacement significantly lags the needs. Additional funding on the order of 5% per year annual growth for the next 20 years is necessary to fix the current deficiencies and maintain a safe bridge inventory.

D+ | Land and Sea Ports of Entry

The San Diego area has three land ports of entry on the U.S./Mexico border and three seaports of entry on the San Diego Bay. Trade, commerce, and goods movement account for billions of dollars of economic growth in the San Diego region. The forecast for 2010, the County of San Diego would have a Gross Regional Product (GRP) of approximately \$174.5 billion and that would rank 47th in the world. Currently, the San Diego land port border crossings are directly experiencing a trend referred to as the "thickening of the border" resulting in an inefficient and expensive border. A "thick" border is associated with new or variably increasing bi-national inspections, uncertainty over long wait times, layers of rules and regulations from different agencies and departments, more stringent and/or changing requirements, and physical infrastructure impediments and increased maintenance of physical assets. The region is failing at border system efficiency because we are adding procedures and processing times which may be "efficient" for a solitary purpose, but when multiple purposes and institutions layer on their procedures; the net effect is unacceptable delays and traffic congestion, generating huge economic costs and losses to the region.

San Diego civilian sea ports of entry include the Tenth Avenue Marine Terminal, the National City Marine Terminal, and the B Street Cruise Ship Terminal. Capacity is affected by the physical limitations of each port of entry. The capacity at the Tenth Avenue Marine Terminal is constrained due to space limitations and surrounding land uses. Capacity at the National City Marine Terminal is generally adequate for current demand. The B Street Cruise Ship Terminal currently meets passenger and cruise ship requirements. Each of the San Diego civilian sea ports is impacted by site constraints, incompatible surrounding land uses, and local street networks. Access to the Tenth Avenue Marine Terminal is constrained by nearby at-grade railroad and trolley crossings, intersection geometrics, and community restrictions on truck traffic. The B Street Cruise Ship Terminal is constrained by the physical size of the facility and the limited area for ground transportation (buses, taxis, etc.) to serve cruise ship passengers. The 1,000-foot length of the B-Street Pier restricts the size of ocean liners that can use the B Street Cruise Ship Terminal. The supporting infrastructure for Tenth Avenue Marine Terminal and National City Marine Terminal are in need of improvement to efficiently meet current needs.

C- | Levees/Flood Control/Urban Drainage

The region's levees, flood control systems, and urban drainage facilities are aging, and do not meet the current standards in some areas. These aging infrastructures are continuing to impact agency maintenance budgets and level of effort. The amount of funding available for improvement projects and maintenance for existing facilities has dwindled. The problem is further compounded by the increased environmental regulations, including additional mitigation for ongoing maintenance of flood control facilities which are driving costs up and forcing jurisdictions to reduce the amount of systems to annually maintain. As a result, municipalities are not able to budget necessary funding for all of these demands and the project costs. Unless there is a significant increase in funding for levees, flood control facilities, and urban drainage systems continues, the region could face a deficiency in excess of \$1 billion in the next 20 years.

C | Parks/Recreation/Environment

Between 2005 and 2012, there were numerous improvements in parks; however, declining revenue from taxes, grants, and the rejection of Proposition 21 by voters left a \$500 million a year deficit for operating, maintaining, and repairing 278 state parks and wildlife conservation areas. Without continuous funding from taxes or bonds, many park amenities and facilities have outlived their economic life, and needed replacement or renovation of infrastructure has not been met. The state backlog of park repairs is in excess of \$1 billion, and this amount will only increase without sufficient investment of capital and maintenance. Given the depressed state of the economy at the state, federal, and local levels, and its negative impact on parks, the overall grade level declined from a B- to a C between 2005 and 2012.

C | K -12 School Facilities

In general, rating categories of facility capacity, condition, and public safety are very good due to passage and implementation of construction bond measure funding over the past 5 to 10 years at most school districts in San Diego County and the previous availability of state funds. However, in spite of the generally good condition of school facilities, the overall rating has dropped from a C+ in 2005 due to the current lack of funds to maintain these facilities, and the poor prognosis for both school district and state funding in the future. In summary, our county area schools are in very good condition today, but with very little future funding for routine and major maintenance, these facilities will deteriorate and become a deferred maintenance problem in the future.

B | Solid Waste

Solid Waste includes recycling facilities, landfills, transfer stations, and collector fleets. Infrastructure for solid waste in San Diego County is, for the most part, privately held. While there are some limited municipal facilities, such as Miramar Landfill operated by the City of San Diego, most infrastructure needs in the county are based on the marketplace. The role that local governments and the state play are through regulations and ordinances, such as recycling requirements, and through funding, such as technical assistance grants and assistance with low interest loans for recycling facilities. Although currently infrastructure in the region is working well, increased recycling requirements will soon be in place that will increase the need for investment in recycling facilities, and businesses that utilize recycled materials such as food stock.

D+ | Surface Transportation

The low grade in Surface Transportation is the result of the deteriorating condition of our local roads and highways combined with the uncertainty of future state and federal funding. However, in the last year traffic congestion in the region has actually decreased since 2005 as a result of the poor economic conditions and the completion of key improvements to our highway system. However, in the last year traffic congestion is increasing as the economy begins to recover. While congestion appears to be on the rise, the condition of our roads and highways is deteriorating as local and state maintenance money shrinks and the list of deferred maintenance projects grows. Looking into the future, SANDAG has developed a comprehensive transportation plan for the needs of the San Diego region over the next 40-years. The planned expansion of the freeway managed lane network and transit systems, including light rail, commuter rail, and rapid bus service is a key component of meeting future transportation demands and maintaining San Diego's quality of life. The current TransNet program will provide consistent local funding; however, the planned improvements are based on receiving a 45% contribution from state and federal sources. Based on the current economic conditions, future state and federal funding sources are in jeopardy. We are already seeing the effects of reduced funding

with our local roadways not being well maintained, the condition of our highways starting to deteriorate, and transit service being cut due to the lack of funding. On the bright side, TransNet funds are currently being used to upgrade the condition of our trolley system. Reliable funding sources for highway and transit facilities are absolutely needed to meet future demands, and new sources of local funding are needed to operate, maintain, and repair our road, highway, and transit system.

B | Wastewater/Collection System

Wastewater collections systems include gravity pipelines, pump stations, and pressurized pipelines also known as forcemains. Overall, the condition of the wastewater collection systems in the San Diego region showed a marked improvement from the last Infrastructure Report Card in 2005. The collection systems are generally in good condition, however, portions of the systems remain in fair condition. The primary impetus behind this improvement was an unprecedented and sweeping regulation in California that required wastewater collection agencies to proactively maintain, replace, and fund necessary collection system improvements. The fact that the condition of wastewater collection systems has improved over the past seven years is a very positive trend.

From a public policy perspective, it is important that policy makers recognize that, as wastewater collection systems age, the replacement of this vital infrastructure requires continual attention. Recent history has shown that routinely maintaining and replacing wastewater collection system infrastructure is a much more cost-effective and better use of increasingly scarce public dollars than waiting for infrastructure to fail. As such, ASCE strongly encourages policy makers to continue to make tough decisions pertaining to rate adjustments, grant funding, etc., to adequately fund the replacement of this infrastructure before it fails.

B+ | Wastewater Treatment

Wastewater treatment and water recycling facilities in San Diego County are well managed and consistently meet or exceed state and federal regulations. Long-term asset management plans are in place, regional cooperation is high, and infrastructure investment over the past decade is paying dividends in the form of fewer wastewater spills, cleaner beaches, increased production and consumption of recycled water, and acceptance of wastewater as a valuable commodity. Current programs are adequately funded in general, however, additional public and private investment will be required to maintain compliance and to achieve an appropriate level of resource recover energy and other resources.

B | Water

The water category includes water supply, potable water supply systems, potable treatment plants, potable water distribution systems, and recycled water distribution systems. The condition and capacity of water agency treatment and distributions systems varies among agencies, but in general they are considered good. There is much to be positive about in the outlook for water in San Diego; however, there is much to be concerned about. The region's focus on diversifying its water supply portfolio over the last 15 years has been successful, but there is more that needs to be done. Long-term reliability of our traditional imported water supplies is threatened by environmental issues, climate change, and competing needs. Although agencies have assessed the condition and capacity of their infrastructure as generally good, they have identified replacement and rehabilitation as a high priority to maintain service reliability. The challenge agencies face currently and in the future are managing water rates while balancing capital project funding needs against rapidly rising cost of water supplies, regulatory requirements, and economic cycles.

2005

2012

Aviation

-

C+

Grade C+ is the overall condition of our local aviation infrastructure. However, there are many issues beyond rusty nuts and bolts that threaten the infrastructure of the national air transportation system. Some of the greatest threats stem from capacity constraints due to increased daily loads, community encroachment, escalating regulatory requirements, increasing environmental demands/constraints and political pressures contrary to the interest of airports.

Although much of the overall grade of this report card primarily measures the physical condition of the air transportation system (runways, taxiways, ramps, terminals, navigation systems, etc.), it's important to note that the social and environmental factors mentioned above have historically been much more of a threat to the usability and future flexibility of airport operations.

Condition

Airport condition can be viewed and measured in a variety of ways. First, there's the condition of the surfaces or pavements; runways, taxiways, ramps, aprons, helipads, service roads and general airfield. Then there's also the condition of airport facilities such as; terminal, hangars, parking lots and public use facilities such as car rental and restaurants. Airport access is extremely important which include the surrounding roads, freeway access and traffic conditions. The overall condition of the runways, taxiways, ramps, and general airfields receive a grade of B.

However, it should be noted that aviation pavements should never be allowed to be in any condition lower than that of Grade B. Any proposed "measuring scale" created to measure pavement conditions, relative to a roadway for example, should not be viewed as equal in scale with respect to an airport surface; say for a runway. A Grade C pavement for a roadway may not be a matter for concern on a highway for instance; however a Grade C runway pavement on an airport for may be quite disturbing. Airport safety can be directly related to the condition of the airport pavements. Normal wear and tear, that is generally acceptable on a roadway for instance; i.e., potholes and spalling pavement is not as acceptable on airport active surfaces.



Powerful aviation engines produce vacuum forces that can pull pavement debris into engines.

A common method of measuring the pavement condition at airports is the use of the Pavement Condition Index (PCI). The PCI is a “visual” condition indicator that works the same as a grading scale. PCI = 100 would be pavement in perfect condition and a PCI = 35 (for example) would be failed pavement condition. For this component, we’ll focus primarily on airport pavements; runways, taxiway, ramps, aprons, helipads, and airfield service roads. It was the PCI method that was used to determine the condition of the local pavements.

Due to the danger of surface debris that a poor aviation surface can produce, called Foreign Object Debris (FOD), the condition of airport pavements can greatly affect the safety and operations of aircraft. Therefore, the FAA and State Division of Aeronautics have strict regulations and standards concerning airport pavements. But since money is limited to fund airport projects, airport sponsors must compete for these funds. Since some airport sponsors have better access to grant funds than others (for example a 5-10% matching requirement), then some sponsors have pavements in good to excellent condition, while others have pavements with significant structural challenges.



PCI = 60



PCI = 100

Pavements in poor condition generally require significantly more upfront cost to rehab since the entire depth of pavement generally must be removed, reused or replaced to a modern standard. This augmented cost of course adds to the difficulty in acquiring funding. For example, when an airport only requires surface maintenance to bring the pavement back to a PCI 100 condition, funding is generally acquired much easier and cheaper as compared to a competing airport sponsor that may have significant rehabilitation needs. Therefore, it’s much more cost-effective to constantly maintain aviation surfaces over time, rather than ignore the pavements until perpetual failure. Airports sponsors attempt to maintain a healthy pavement condition by instituting Pavement Management Programs (PMP). PMPs help extend the life of an airfield pavement to the maximum extent practicable as well as demonstrate to the FAA that grant funds are being utilized in the most efficient way possible. If future airport funding is not received in a consistent and reliable way, planning and constructing around the PMP becomes problematic and will ultimately project exponentially higher repair costs out to future years.

Capacity

One of the biggest issues facing the regional aviation community is capacity constraints. The overall capacity grade for the San Diego County airports is a D+. Future capacity constraints are of a particular concern in the southwest U.S. Political pressures, due to community encroachment, consistently prevent or greatly hinder most airport expansion projects. There are only two airports in San Diego County that have FAA Part 139 Certification for regularly scheduled passenger service: San Diego International Airport and McClellan-Palomar. The San Diego County Regional Airport Authority, for example, recently conducted an extensive study with respect to the regional transportation system and existing and future capacity constraints. The report is called the Regional Aviation Strategic Plan (RASP).

In summary, the study found that the local regional aviation community will be at its constraining capacity by approximately 2020-2025. This will result in increased delays, higher cost spikes, lower level of air service and increased Suppressed Demand. Suppressed Demand is defined as the number of passengers who would like to travel, but do not due to lack of available capacity and increased travel costs; see Figure 4-13 below. Future system improvements, which include; integrated use of multiple airports, terminal expansions, high speed trains, intermodal centers, airspace navigation upgrades utilizing

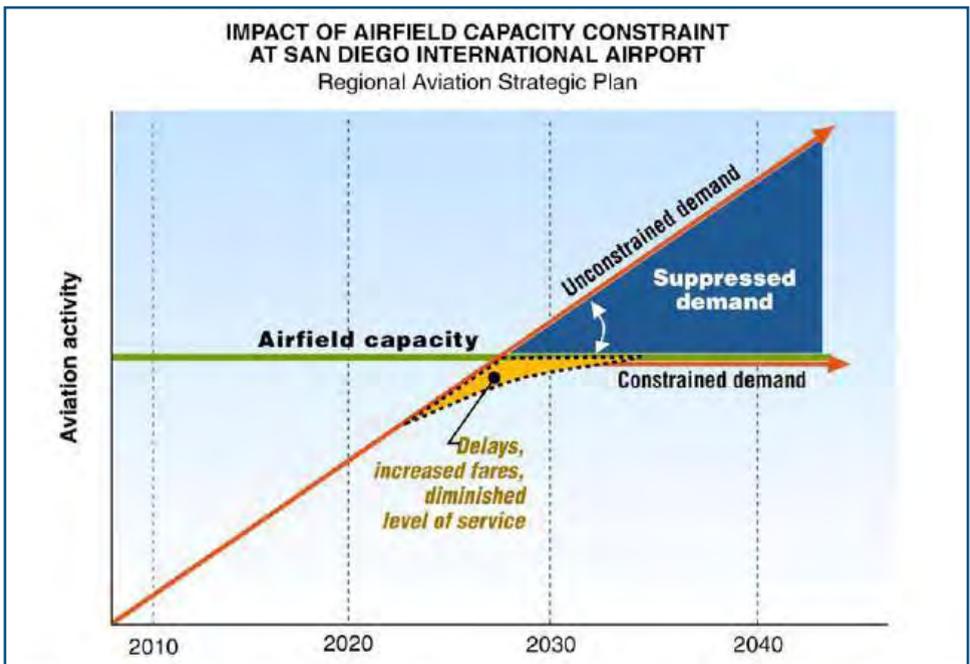


Figure 4-13

GPS, can improve the customer experience, reduce queue times in and out of airports, but these improvements cannot substitute for ultimate need for runways, taxiways and aprons expansion in the near future.

The FAA estimated that nationally, delays caused by capacity constraints, costs users \$9 billion per year and is estimated to cost the U.S. \$22 billion per year by 2025. The sample charts below illustrate capacity issues facing many major Southern California airports.

A recent political initiative in 2006 to relocate San Diego International Airport (SDIA) to a more viable location failed due to the lack of political will and a bombardment of public concern generated by the media. This subject is also briefly discussed below in the Political Susceptibility and Environmental Susceptibility sections.

Figures 4-13 and 4-20 below are from the RASP prepared by the San Diego County Regional Airport Authority.

SDIA is a single runway airport without the room to build additional runways. Figure 4-13 below illustrates that sometime between 2020 and 2030, SDIA will reach its capacity limit (with respect to the airfield) triggering delays, increased fares, and a diminished level of service.

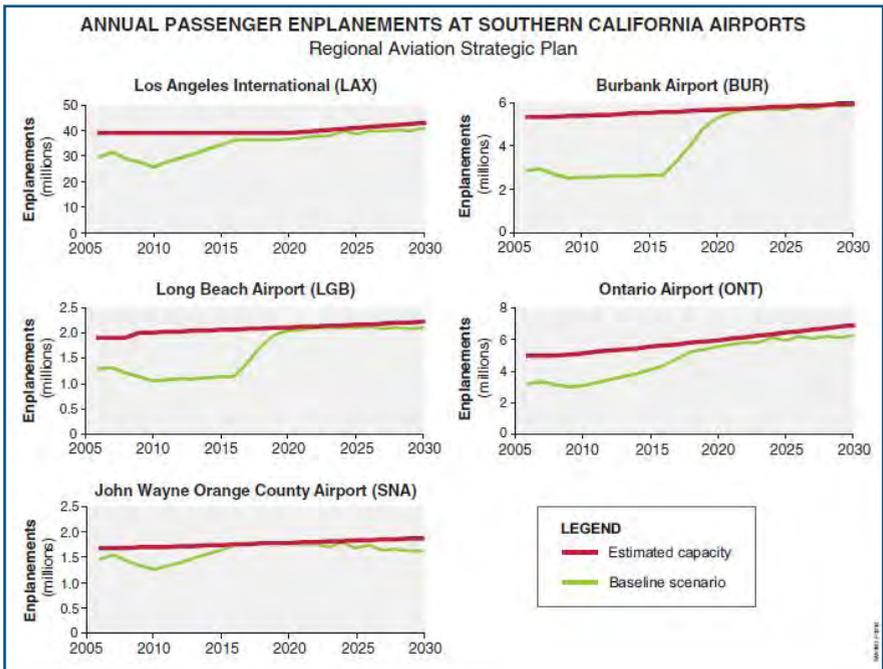


Figure 4-20

From Figure 4-20 (p. 23), it is evident that capacity limits also affect most major Southern California airports. In fact, the study indicates that many of the Los Angeles area airports will hit their capacity limits prior to year 2020.

Operation & Maintenance

Airports have some of the strictest operational and maintenance standards in transportation history. Airport staffs are highly specialized and work as a team to effectively operate and maintain airport facilities in a safe, efficient, and consistent fashion. The overall operations and maintenance grade for the San Diego County airports is a B+.



Airports are some of the greatest job producers and economic engines in the region

Community reliance on airports extends well beyond flying aircraft. Airports create jobs and are huge economic engines for the national economy. This fact cannot be overstated. For example, Gillespie Field in the City of El Cajon employs more people than any other business in the City of El Cajon. Between Gillespie Fields' aviation businesses and its industrial parks, Gillespie Field is the number one job producer in the City of El Cajon.

Another example would be the San Diego International Airport (SDIA). Released in May 2006, the 2005-2035 Airport Economic Analysis Report concluded that:

- In 2005, SDIA had a \$10 billion impact on the regional economy and 116,000 jobs
- 1 in every 16 jobs in the region are directly or indirectly related to the operation of SDIA. (per San Diego County Regional Airport Authority Audit Committee Meeting Report; November 18th, 2009)

Airports also generate millions of dollars in jobs due to its maintenance projects and Airport Capital Improvement Projects (ACIP). These projects are federal and state grant driven and provide jobs and income for hundreds of construction personnel, engineers, lab technicians, administrative personnel, etc., per project. These funds are directly and indirectly fed back into the local economy. Gillespie Field recently received and implemented an economic stimulus project – a \$1.6 million American Recovery and Reinvestment Act (ARRA) project that created work and drove revenue into a struggling local City of El Cajon economy.

Public airports are unique from most other public facilities in that they're often operated in conjunction with multiple public agencies (i.e., federal, state and local government and private operators within each facility). For example, airport operators have onsite FAA personnel operating and maintaining the Air Traffic Control Tower and air navigation equipment. The State of California regularly sends aviation experts to conduct annual facility inspections, and the airport operator generates revenue by issuing leases on approved airport land to private and public business. In addition, the airport operator also negotiates land leases with private and public aviation related business for aircraft storage (hangars), aircraft maintenance, flight schools, aircraft fueling, aircraft development, airport restaurants, car rental, etc.

Public Safety

Public safety and airports are synonymous. Firefighting, air rescue, medical response, and law enforcement aircraft are essential services demanded by the public and are staples of a region's overall security and stability. These vital aviation functions are typically based at public general aviation airports. A failure to protect the airspace, freedom to fly, and failure to fund essential airport improvements, repairs, and maintenance would have a direct effect on these critical services. During major emergencies, such as major southwestern wildfires (Witch Creek and Cedar fires) general aviation airports were major staging areas for state and local support and fire crews. In many cases, fire crews and their support staff lived directly on airports during wildfire events. Public airports need to continue to have the capabilities to provide these services without the danger of community encroachment or political opposition to the flight of aircraft 24 hours a day, seven days a week. The overall public safety grade for the San Diego County airports is an A.

Political Susceptibility

This component attempts to provide a grading scale on the intrinsic threats to our transportation infrastructure due to contrary political and/or public will. An example of this might be a City Council attempting to close a public airport in order to build residential homes and a shopping mall. This category could also include the effects of NIMBY (Not In My Backyard).

Surveys conducted by Aircraft Owners and Pilots Association (AOPA) www.aopa.org/info/history.html reported that protection for local airports – from politics and encroachment – is one of the greatest concerns among pilots of all experience levels. In the United States, we have for some time been losing public-use airports at a rate of almost one per week; there has been an alarming increase in efforts to close public facilities. One prominent example



San Diego Sheriff's rescue helicopter crew in training

is Meigs Field (below), Chicago's lakefront general aviation reliever only minutes from the downtown business district. Mayor Richard M. Daley ordered the airport closed so that a \$28 million park could be constructed on the site.



Meigs Field and Marine Corps Air Station El Toro were casualties of politics

El Toro military airbase was located in southern California. Although El Toro Marine Corps Air Station (MCAS) was a military facility, it's a great local example of an anti-airport phenomenon (NIMBY) carried out by the public and anti-airport politics. El Toro, an excellent airport with respect to its layout and usability, was forcibly decommissioned due to a political consortium of political entities wishing to convert the airport to a park. They succeeded in closing the base in the early 2000s. Another local example is the City of Oceanside's attempt to close Oceanside Airport so a Costco store could be built on the site (or another non-aviation use). The overall political susceptibility grade for the San Diego County airports is a D+.

In addition to noise and airspace restrictions, anti-airport agendas are often fueled by conflicts in Land Use Plans in the vicinity of airports. By design, airports typically are located in wide open flat locations with plenty of excess space. When airports are built, they bring new roads, wet and dry utilities (such as power stations, storm water drainage, potable water and sewer). As mentioned, airports are typically located in flat open spaces and are supported with roads and utilities originally built to support the airport and aviation related business. However, private developments are attracted to these attributes and typically draw a flood of interest (including residential developers) to the vicinity of airports since much of the essential infrastructure has already been installed.

When incompatible developments encroach on Airport Influence Areas (AIAs), particularly residential developments, they generally generate public outcry to eliminate the airport and its noise. Although the outcry is typically from the vociferous minority, they can have a huge impact on local political will against airports. We believe it is important that congress clearly understands this dynamic and needs to support its local airport facilities when faced with public challenges presented by anti-airport members of the public.

Environmental Susceptibility

This component attempts to provide a grading scale on the intrinsic threats to our transportation infrastructure due to a constant intrusion of environmental regulations and/or parasitic cost entitlements that burden and restrict (or prevent) expansion, maintenance, new construction, and improvements. The overall environmental susceptibility grade for the San Diego County airports is an F.

There are two aspects of environmental impacts on airports we'll briefly discuss. One aspect is from a regulatory standpoint and the other is from a humanistic standpoint.

Airports and Conflicting Environmental Regulations

First, there are the cost implications due to the constant intrusion of environmental regulations and/or parasitic cost entitlements that burden and restrict (or prevent) expansion, maintenance, new construction, and improvements. Some examples of these are multiple layers of storm water regulations. For example, the Airport Industrial Storm Water General Permit, layered with the Municipal Storm Water Permit, layered with the local storm water ordinances, and the State Water Control Board. In addition, there are regulations from HazMat, APCD, LEA, Army Corp, U.S. Fish and Wildlife, CA State Fish and Game, CEQA, NEPA, etc. Furthermore, these environmental regulations frequently conflict with each other, and are often in conflict with FAA or aviation regulations as well. FAA safety regulations generally predate environmental regulations and were written specifically to protect human life in the air and on the ground. Airport operators are regularly faced with state environmental regulations that seem to have a larger "regulatory hammer" than that of FAA regulations.

One example of this conflict is the subject of wildlife hazards near runways. Birds for instance, are extremely hazardous to aviation operations. Birds near runways are responsible for multiple aviation impacts and accidents. However, per environmental requirements, airports are often forced to spend aviation funds to harbor and maintain endangered bird colonies or other species of wildlife adjacent to and within runway safety areas. This is contrary to the intentions of FAA regulations that require airport operators to prevent and eliminate bird and wildlife attractants and hazards. Airport operators should not be placed in predicaments where they need to choose environmental compliance over human safety.

Airport operators believe in environmental compliance, but their primary concern should be the safety of human life. Airport staffs are often bogged down attempting to comply with multiple environmental regulators who have no knowledge or concern about airport safety or regulations. Such regulations often cause conflicting guidance policies from multiple agencies and place huge burdens on thin operational budgets. Many regulations force cost prohibitive solutions and appear to provide little to no real environmental benefit.

An additional problem with environmental regulations is long delay periods sometimes associated with environmental studies or Environmental Impact Reports (EIRs). The long lag times associated with these studies often exceed the funding “time windows” of available grant opportunities.

Airports are unique industrial facilities on many levels. By function and design, they're contrary to traditional industrial, commercial, or municipal facilities. For example, the safest airports are those designed with flat impervious surfaces with little to no landscaping, fast draining concrete drainage structures, and no physical obstructions or bird attractants. In fact, FAA regulations (depending on their location) would prohibit many modern environmental drainage control devices used by the industrial industry such as; raised curbs, gutters, ditches, open basins (water storage devices), debris creation areas, and any non-frangible objects having nothing to do with airfield navigation on operational areas. If environmental legislators fail to recognize the unique functional characteristics of airports while drafting environmental legislation (without special understanding and/or consideration for airports), they will continue to produce multiple layers of conflicting legislation contrary to FAA regulation safety compliance. These contradicting regulations have detrimental effects on airport operations, airport staff, aviation funding, aviation safety, and federal compliance.

Environmental Impacts on Airports Due to Community Encroachment

The second aspect of environmental impacts on airports pertains to “human” environmental impacts. These impacts are generally in the form of public encroachment on airport safety areas and surrounding airspace.

As mentioned earlier, communities that actively fight to close and impose curfews on airports that pre-existed them are a major environmental threat to airports and their operations. These issues are created by community (residential) encroachments which tend to locate closer and closer to airports. In addition, airport encroachment also includes airspace obstructions where approach/departure paths of aircraft are impeded. These manmade obstructions are causing airports to lose runway length (displaced threshold – see image below) due to the need to overfly these impediments. Incompatible land uses near airports have significant financial impacts on airports, their users, and the community. Less runway causes aircraft to take-off and land with less weight and therefore less fuel load and/or passengers. The financial implications of this alone are staggering and may not be completely attainable. Passenger air service scheduling becomes more complicated because flights must pre-plan their flights with reduced passengers or fuel load in mind.

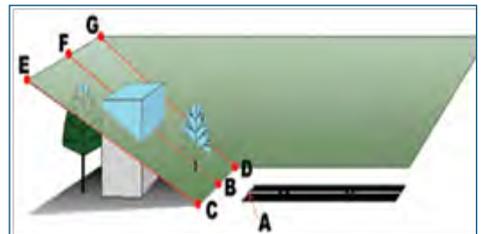


Illustration of airspace encroachment

Some of the financial burdens on airports due to community encroachment are:

- Cost from FAA Part 150 noise studies
- Costs of noise monitoring equipment
- Cost of noise staff employed just to handle public complaints
- Loss of airspace routes due to voluntary or non-voluntary noise procedures
- Loss of staff time due to multiple community meetings concerning safety and noise
- Loss of operations due to existing and possible curfews
- Reduced fuel loads and trip reach due to displaced thresholds (lost runway length)
- Mitigation costs for residential sound reduction in homes
- Loss of airport expansion potential due to community fear and encroachment
- Costs due to increasing environmental policies, studies and mitigation cost

In addition, there are cost implications of the involuntary curfew at SDIA. An estimate of revenue loss by community encroachment can be seen with an example of a community imposed curfew on San Diego International Airport (SDIA). Assuming SDIA's runway is worth at least \$1,000 per minute (based on SDIA contract liquidated damage rates), the estimated costs of the imposed curfew alone calculated over the past 30 years is approximately = \$4.6 Billion.

What You Can Do

- Become an informed citizen by improving your understanding of the aviation infrastructure issues that threaten the quality of life in San Diego County.
- Stay informed, form your own opinion, and regularly express your opinion to the policymakers and regulators who influence the aviation infrastructure you rely on.
- Keep abreast of the major issues being discussed and considered by the local airport agencies. Let them know what you think.

Sources

- Regional Aviation Strategic Plan (RASP). www.sdrasp.com
- FAA sponsored video on Capacity Constraints and the Next Generation of Air Transportation. www.youtube.com/watch?v=gp2557avX78&feature=related.
- Several individual agency surveys

2005

2012

Bridges

-

C+

The bridge infrastructure for San Diego County receives an overall grade of C+. Currently, our bridges are safe and only 19% of the bridges are in need of major rehabilitation or replacement; however, the average age of our County's bridge inventory is about 41 years, and by 2020 a majority of the bridges in San Diego County will be beyond their expected design life. Further, the Highway Bridge Program (HBP) which is the major funding source for bridge maintenance, rehabilitation, and replacement, is tied to the uncertain Federal Transportation Act re-authorization and inadequate gas tax revenue. As with most of our infrastructure, available funding for regular maintenance and long-term rehabilitation and replacement significantly lags the needs. Additional funding on the order of 5% per year annual growth for the next 20 years is necessary to fix the current deficiencies and maintain a safe bridge inventory.

Background

This is the first report on highway and local road bridges for the San Diego County Report Card. Previous Report Cards included bridges in the Surface Transportation section. Bridges are defined in accordance with the National Bridge Inspection Standards (23 CFR 650.3) which generally include structures with a clear opening of more than 20 feet, but excludes culverts and bridges for rail and transit.

Bridges for rail and transit have been included under the Surface Transportation section.



The Black Canyon Road Bridge is an historic arch bridge that was replaced on a new alignment by the County in 2010.

Data for this Report Card category was obtained from local, state and federal sources. In accordance with Federal Highway Administration (FHWA) guidelines, structures that meet the federal definition of a bridge and have been included in the National Bridge Inventory are inspected biennially by Caltrans. This database provides information on bridge condition and any current structural or geometric deficiencies.

Surveys were also sent to San Diego County public agencies with bridges in the National Bridge Inventory. The response represents about 24% of the total bridge inventory. The results of these surveys were extrapolated and used to further refine the grade for current and future conditions.

Per FHWA criteria, bridges are considered “deficient” when they have a Sufficiency Rating (SR) of less than or equal to 80 and are classified as either Functionally Obsolete (FO) or Structurally Deficient (SD). These bridges are in need of rehabilitation (major reconstruction) and are eligible for federal HBP funding. When the SR drops below 50, complete replacement may be warranted. The SR is assigned by Caltrans bridge inspectors and is a formula-based value ranging from 100 for a fully sufficient bridge to 0 for an entirely deficient structure. Structural deficiencies are triggered by deteriorated conditions of bridge elements and reduced load-carrying capacity. An SD designation does not mean that a bridge is unsafe; however an SD bridge typically would require significant repair or reconstruction to remain in service and may eventually require full replacement. A bridge is considered functionally obsolete when it does not meet current design standards, either because of increased traffic volume, poor geometry, or due to changes to the design standards. An FO bridge may need to be widened, rehabilitated, or replaced depending on the specific deficiencies.

Bridge Classification		Sufficiency Rating		Eligibility for Highway Bridge Program funds
<p>Not deficient</p> <p>Bridges with acceptable condition, configuration and design</p>	or	81 - 100	=	<p>Not eligible</p> <p>(Classified as Not Deficient and/or having a higher than 80 Sufficiency Rating)</p>
<p>Deficient</p> <p>Structurally Deficient</p> <p>Bridges in poor condition regardless of configuration or design</p> <p>or</p> <p>Functionally Obsolete</p> <p>Bridges with poor configuration or design regardless of condition</p>	and	50 - 80	=	<p>Eligible for rehabilitation</p> <p>(Classified as Structurally Deficient or Functionally Obsolete with a Sufficiency Rating of 80 or less)</p>
		0 - 49	=	<p>Eligible for replacement or rehabilitation</p> <p>(Classified as Structurally Deficient or Functionally Obsolete with a Sufficiency Rating of less than 50)</p>

FHWA's process for designating bridges as eligible for HBP funding

According to the FHWA, there are approximately 24,463 National Bridge Inventory structures in California including 1,432 in San Diego County. This represents a total bridge deck area, the roadway surface area on the bridge (bridge length times road width), of about 27.74 million square feet statewide and 2.2 million square feet county wide. Locally, about 19% of the total bridges are classified as deficient while about 29% are deficient statewide. Comparing the same data by the total bridge deck area, the percentage of deficient local and state bridges are 24% and 40%, respectively. Nationally, the *2009 Report Card for American Infrastructure* reported that 27% of the country's bridges are deficient. For existing deficient conditions, San Diego County bridges fare slightly better than the state or national level.

Although current design provisions require a 75-year design life, most existing bridges were designed to last about 50 years. Currently, the average age of San Diego County bridges is about 41 years, and by 2020 a majority of the bridges in San Diego County will have exceeded their expected design life.

Adding to the problem, vehicle miles and truck traffic have nearly doubled over the last 20 years, with many trucks carrying heavier loads. Over time, this higher demand will accelerate structural deterioration and reduce the usable design life. Therefore, the percentage of deficient bridges can be expected to increase in the future.

Funding

In 2006, the total investment in bridge repairs was about \$10.1B nationally. The U.S. DOT's 2008 Condition and Performance Report states that a \$17.9B annual investment (in 2006 dollars), representing a 5.15% per year annual growth in funding over a 20-year period, would be required to eliminate the backlog of deficient bridges.

The funding situation in San Diego County is very similar to national funding levels. By applying the ratio of the total deck area, the annual funding need is approximately \$104.9M. The 2010 Regional Transportation Improvement Program indicates the total investment planned for San Diego County bridges is about \$67.3M per year. At the current funding level the condition of our bridges will continue to deteriorate.

The primary funding source for bridge rehabilitation and replacement is through the federal HBP which is a part of the current SAFETEA-LU Federal Transportation Act. While this law expired in 2009, it has been extended by Congress many times at the prior funding levels. The programs under SAFETEA-LU, including the HBP, are funded through an 18.4 cents-per-gallon federal gas tax which has not increased since 1993 (when a gallon cost a little more than \$1). Meanwhile, bridge construction costs in California from 1993 to 2010 have increased by 162% according to Caltrans Construction Statistics. Increased use of fuel efficient, alternative fuel, and electric vehicles further reduces gas tax revenue. This declining revenue source is inadequate to keep pace with current funding levels much less to provide for the long-term needs.

The letter grade for San Diego County bridges encompasses the individual categories as described earlier in the report card summary which include capacity, condition, operations and maintenance, public safety, and funding for both the current and future conditions (6 to 20 years). Based on the data described above and subsequent scoring, a letter grade of C+ best represents the overall status of San Diego County bridges. The overall grade could be raised if future funding is allocated to assure that bridges are maintained at their current condition or improved. With no changes in the



The West Mission Bay Drive Bridge is a structurally deficient bridge scheduled for replacement by the City of San Diego.

funding levels, the letter grade will probably drop to an unacceptable level of D within the next 6 to 20 years.

What You Can Do

- Actively support public and private investment in bridges and ground transportation infrastructure.
- Contact your elected officials about the importance of the reauthorization of the Federal Transportation Act and establishing a dependable revenue stream.
- Adopt a sustainable lifestyle incorporating carpooling and locally produced products to reduce the demand on our bridges, increase their design life, and reduce congestion.

Sources

- 2008 AASHTO Bridging the Gap – Restoring and Rebuilding the Nation's Bridges. www.transportation1.org/bridgereport/solutions.html
- 2008 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance www.fhwa.dot.gov/policy/2008cpr/chap11.htm
- GAO Report July 2010 – HBP: Condition of Nation's Bridges Shows Limited Improvement, but further Actions Could Enhance the Impact of Federal Investment. www.gao.gov/new.items/d10930t.pdf
- National Bridge Inventory by Caltrans. www.dot.ca.gov/hq/structur/strmaint/
- Supplemental information and data can be found on the FHWA site www.fhwa.dot.gov/bridge/nbi/defbr10.cfm
- Several individual agency surveys

2005

2012

Land and Sea Ports of Entry

C

C-

Land Ports of Entry

Trade, commerce, and goods movement account for billions of dollars of economic growth in the San Diego region. The 2010 forecast for the County of San Diego would have a Gross Regional Product (GRP) of approximately \$174.5 billion that would rank 47th in the world. San Diego County has three land ports of entry and three sea ports of entry which contribute significantly to the regional, statewide, and national economy. Much of our region's world trade exports and tourism pass through these land and sea ports of entry. Due to the different mission objectives between land and sea ports, the following separate assessments are provided for land ports and sea ports.

In today's global economy, borders provide various local, regional, and national economic opportunities through enhanced movement of goods and people. A region's economic growth is directly related to openness of trade with other countries and neighboring regions, this is particularly true of the relationship between the U.S. and our NAFTA partner, Mexico.

On a local level in San Diego, border crossings fuel the economic activities between regions, especially the retail sector. On a national level, freight movement has a much broader impact as it can significantly affect areas such as the capital, labor, and retail markets, as the ownership of these operations are distributed throughout trading countries. Currently, at the San Diego border crossings we are directly experiencing an ominous trend referred to as the "thickening" of the border. A "thick" border—which is associated with new or variably increasing bi-national inspections, uncertainty over onerous wait times, layers of rules and regulations from different agencies/departments, more stringent and/or changing requirements once compliance is achieved, and physical infrastructure impediments—is an inefficient and expensive border. While Europe moves



Northbound Otay Mesa



Southbound San Ysidro

toward a more integrated border environment, our borders are moving in the opposite direction, the competitive advantage created by the Canada-Mexico-U.S. free trade agreement of 1989 and the North American Free Trade Agreement (NAFTA) of 1994 is eroding. A sense of frustration exists within the Mexican, Canadian, and U.S. business communities regarding the fact that many practical measures that could reduce border-related travel times and travel costs have yet to be taken.

Background: The Region Has a Blended Economy

The need to improve the San Diego region's border crossing capacity stems from steady growth in global and regional economic integration that squeezes ever more people and goods through border infrastructure that was sized for a much smaller and significantly less security-conscious economy. Trade, commerce, and goods movement are vital to the region's economy and account for billions of dollars of economic growth in the San Diego region. In 2002, the County of San Diego had a Gross Regional Product (GRP) of approximately \$126 billion and the GRP of the Municipality of Tijuana was approximately \$11 billion. Together, the combined economy would rank 30th in the world.

San Diego County has three land ports of entry – Otay Mesa, San Ysidro, and Tecate, which contribute significantly to the regional, statewide, and national economy. The combined value of cross border trade moving in the San Diego regions was valued at \$30 billion in 2010. The border crossings also allow people to travel between Mexico and San Diego, another expression of the region's blended economy. San Ysidro alone is the busiest international land crossing in the world, handling over 60 million crossings through the Port of Entry (POE) in 2010. This number is about two percent higher than Los Angeles International Airport (LAX), which accommodated about 59 million air passengers in 2010.

Much of our region's world trade exports and tourism pass through these land ports of entry. In 2010, California exported \$21 billion in goods to Mexico, accounting for 15 percent of all California exports. Nine percent of the U.S.-Mexico trade value crosses at the Otay Mesa and Tecate POEs. Also, 99 percent of trade between California and Mexico is carried by trucks.

The Otay Mesa POE is one of the ten busiest land POEs in the country, and it is the busiest commercial border crossing on the California/Baja California border. Also, the Otay Mesa POE continues to accommodate the third highest dollar value of trade among all southern border POEs (after Laredo-Nuevo Laredo and El Paso-Ciudad Juarez in Texas).¹

Border regions serve as conduits for economic growth through infrastructure that accommodates expanding pedestrian and freight crossings. Given that border congestion acts as an impediment to trade and cross-border economic opportunities, it is increasingly important to reduce border delays and facilitate trade and traffic. Therefore, encouraging efficient cross-border travel will support economic growth for businesses and long term trade.

Infrastructure Assessment Methodology

The grading system methodology for land POEs is based on input from a working committee that focused on land and sea ports in the San Diego region formed in 2005. The working committee assisted in the development of the 2005 ASCE Report Card for San Diego. For the ASCE 2012 Report Card, the findings of the 2005 border working committee have been updated by staff at SANDAG taking into consideration factors impacting border infrastructure in recent years, including improvement projects either completed or underway, trends in border crossing statistics, and recently completed comprehensive border infrastructure studies. The working committee determined that each facility would be evaluated considering existing condition, capacity, operation, and supporting infrastructure. One critical grading category has been added to the matrix of land POE of issues called “system efficiency.” Below is a brief list of these five grading categories and their definitions:

1. Condition is defined as a physical attribute, predicament, and/ or circumstance of the facility.
2. Capacity considers demand served and physical limitations of the facility.
3. Operation considers travel patterns, demand, and available capacity relative to functionality. The evaluation of maintenance, staffing, and security was not considered.
4. Supporting infrastructure includes feeder roads, local streets, state and federal highways.
5. System Efficiency assesses how bi-national inspections and procedures, lane management, advanced traveler information, and institutional coordination are managed and ultimately impact the efficiency of related border infrastructure. System efficiency looks at how the border procedures, coupled with cross border demand and infrastructure supply perform as an efficient system.

Information was gathered from a variety of sources, including publications, visual “windshield” inspection, and discussion with relevant agencies. The primary evaluation is based on information developed in recent studies. Evaluation of operating land and sea port facilities, such as security requirements, maintenance, staffing, etc. is intangible, subjective, and management based. Therefore we have not tried to measure operations in this context.

The updated grading system for the land POE section is also heavily based upon two commissioned studies completed by SANDAG:

The 2008 California-Baja California Border Master Plan (BMP)

The California-Baja California BMP is a binational comprehensive approach to coordinate planning and delivery of projects at land POEs and transportation infrastructure serving

¹ U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Border Crossing/Entry Data, based on the U.S. Department of Homeland Security, Customs and Border Protection.

those POEs in the California-Baja California region. The California Department of Transportation (Caltrans), in partnership with the Secretariat of Infrastructure and Urban Development of Baja California (Secretaría de Infraestructura y Desarrollo Urbano del Estado de Baja California or SIDUE) and the U.S./Mexico Joint Working Committee (JWC), retained the San Diego Association of Governments (SANDAG) Service Bureau to assist in the development of this Plan.

The primary objectives of the California-Baja California BMP are to:

- Increase the understanding of border POE and transportation planning and create a plan for prioritizing and advancing POE and related transportation projects
- Develop criteria for prioritizing projects related to existing and new POEs and connecting transportation facilities
- Establish a process to institutionalize dialogue among federal, state, regional, and local stakeholders in the United States and Mexico to identify future POE and connecting transportation infrastructure needs and coordinate projects

SANDAG-Caltrans study, 2007: Economic Impacts of Border Wait Times in the San Diego-Baja California Border Region

The Economic Impacts of Border Wait Times Study was conducted by SANDAG, in partnership with Caltrans and developed an economic model to assess the magnitude of regional economic impacts resulting from delays at the ports of entry. This model serves as an analysis tool to understand economic impacts as the volume of travel increases and/or as a result of security screenings.

According to the study, traffic congestion at border crossings has a stifling impact on economic expansion. Inadequate infrastructure capacity at the border crossings creates traffic congestion and delays for cross-border personal trips and freight movements that cost the U.S. and Mexican economies an estimated \$7.2 billion in foregone gross output and more than 62,000 jobs in 2007. Two-hour or longer delays in freight movement at the Otay Mesa – Mesa de Otay and Tecate – Tecate ports of entry are significantly impacting productivity, industry competitiveness, and lost business income at the regional, state, and national level.

Infrastructure Assessment

The land ports of entry are located along the U.S./Mexico border and include San Ysidro, Otay Mesa, and Tecate. The San Ysidro port of entry is the busiest land border crossing in the western hemisphere handling over 31 million northbound and southbound passenger vehicles annually.

The Otay Mesa port of entry handles nearly 9.3 million northbound and southbound passenger vehicles, buses, and trucks annually. It is the region's main commercial port of entry handling the second highest volume of trucks along the U.S./Mexico border, over 1.4 million northbound and southbound annually. The most eastern port of entry is Tecate, which handles over 1.7 million northbound and southbound passenger vehicles, buses, and trucks annually.

The following identifies the assessment of the Land Ports of Entry.

Condition

All existing facilities are maintained to the standards requested by the occupying federal agencies. However, these facilities are inadequate to meet increased security needs and the increased growth in border crossings. The Homeland Security Administration, the General Services Administration, and the U.S. Bureau of Customs and Border Protection are working together to implement planned improvements at each of these ports of entry.

Capacity

Capacity is constrained by the physical limitations of each of the facilities. User demand during peak periods throughout the weekday and weekend day generally exceeds practical capacity at each of the facilities. The facilities experience overwhelming demand and long wait times in the northbound direction. Southbound capacity has diminished significantly in recent years due to increasing southbound inspections.

Operation

Functionally, each of the facilities is constrained by physical limitations of the local street network, overwhelming demand, and limited capacity. The facilities operate according to demand. This demand is generated by the number of border crossings and the level of threat that is placed upon the operating agencies at any given time. Recent studies have suggested expanding hours of operation or modifying time of day restrictions on types of vehicles and entries allowed into cargo compounds to provide greater flexibility to shippers and transportation companies at the Otay Mesa Port of Entry.

Supporting Infrastructure

Recent studies have indicated that the supporting infrastructure associated with the ports of entry can negatively affect the facility's operation both in Mexico and the United States. These reports call for a balanced investment in road infrastructure, which could improve the cross border flow of passengers and commercial cargo. Supporting infrastructure for the U.S. side of the border Land Ports of Entry include the following:

- San Ysidro Port of Entry
 - Interstates 5 and 805
- Otay Mesa Port of Entry
 - State Route 905
- Tecate Port of Entry
 - State Route 94
 - State Route 188

System Efficiency

For purposes of the ASCE Report Card, we are calling this thickening of the border “system efficiency.” The region is failing at border system efficiency because we are adding procedures and processing times which may be “efficient” for a solitary purpose, but when multiple purposes and multiple institutions layer on their procedures, the net effect is unacceptable delays and traffic congestion, generating huge economic costs and losses to the region.

This criterion assesses how bi-national inspections and procedures, lane management, advanced traveler information, and institutional coordination are managed and ultimately impact the related border infrastructure. System efficiency looks at how the border procedures, coupled with cross border demand and infrastructure supply perform as an efficient system. System Efficiency is primarily measured by border wait times and the resulting economic impacts.

Land Port of Entry Assessment Grades

Infrastructure Assessment Grade – Land Port of Entry					
Port of Entry	Condition	Capacity	Operation	Supporting Infrastructure	*System Efficiency
San Ysidro	B	D	C	C	F
Otay Mesa	B	D	B	D	F
Tecate	D	D	B	D	C
Land Port of Entry - Average Grade: C-					

*System Efficiency is measured by border wait times and the resulting economic impacts

Sea Ports of Entry

San Diego civilian sea ports of entry include the Tenth Avenue Marine Terminal, National City Marine Terminal, and B Street Cruise Ship Terminal.

The Tenth Avenue Marine Terminal is a 96-acre multi-purpose facility that has historically supported over 200 commercial ships and moved approximately 1.4 million metric tons of commercial goods annually. With eight deep-water berths, a bulk loader, a 100 metric ton mobile crane, on-site USDA and US Custom's inspection services, warehouses and lay-down areas, the Tenth Avenue Marine Terminal accommodates refrigerated goods, container operations, break bulk, and dry/liquid bulk cargoes. The National City Marine Terminal (NCMT) is a 125-acre commercial marine terminal that typically supports over 200 commercial ships and processes over 500,000 vehicles annually. The NCMT is identified as a strategic port for military purposes and also supports civilian container operations, lumber, and the import/export of automobiles and trucks. The B Street Cruise Ship Terminal has historically supported more than 100 passenger ship calls per year to accommodate over 440,000 embarking and disembarking passengers. These numbers fluctuate with changes in the economy and stability in regions visited by the cruise ships.

The following identifies the assessment of these three sea ports of entry.

Condition

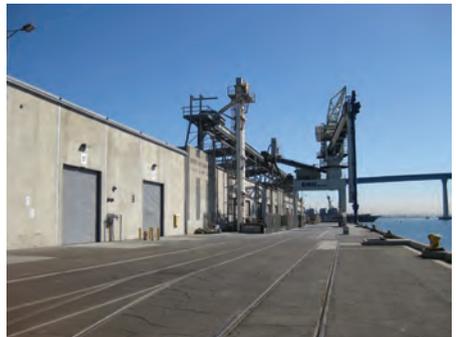
These facilities are maintained to industry standards and received a grade of C. Shore based support personnel adapt the on-site infrastructure to meet the ever changing needs of the customers, tenants and operating departments.

Capacity

Capacity is affected by the physical limitations of each port of entry. The capacity at the Tenth Avenue Marine Terminal is graded as a C and is constrained due to space limitations and surrounding land uses. Capacity at the National City Marine Terminal was graded as a B for



Port of San Diego Heavy Lift



Port of San Diego Tenth Avenue Marine Terminal

current demand. The B Street Cruise Ship Terminal was graded as a C for passenger and cruise ship requirements.

Operation

Each of the San Diego civilian sea ports is impacted by site constraints, incompatible surrounding land uses and local street networks. Access to the Tenth Avenue Marine Terminal is constrained by nearby at-grade railroad and trolley crossings, intersection geometrics, and community restrictions on truck traffic. The B Street Cruise Ship Terminal is constrained by the physical size of the facility and the limited area for ground transportation (buses, taxis, etc.) to serve cruise ship passengers. The 1,000 foot length of the B-Street Pier restricts the size of ocean liners that can use the B Street Cruise Ship Terminal.



Typical cruise ship departing the B Street Cruise Ship Terminal

Supporting Infrastructure

Supporting infrastructure for these three sea ports of entry follows:

- Tenth Avenue Marine Terminal
 - Harbor Drive
 - Twenty-Eighth Street
 - Interstate 5
 - San Diego and Arizona Eastern Railroad
 - Burlington Northern Santa Fe Railroad
 - Cesar Chavez Parkway (due to community concerns, commercial traffic is discouraged from using this entry)
- National City Marine Terminal
 - Interstate 5
 - Bay Marina Drive and 24th Street
 - Civic Center Drive and Tidelands Avenue
 - San Diego and Arizona Eastern Railroad
 - Burlington Northern Santa Fe Railroad
- B Street Cruise Ship Terminal
 - Harbor Drive
 - San Diego Metropolitan Transit System/Amtrak

The supporting infrastructure for Tenth Avenue Marine Terminal and National City Marine Terminal are in need of improvement to efficiently meet current needs. Recent studies have identified the need for access improvements to adjacent roadways and railroad systems that include improvements to freeway interchanges and local intersections due to increasing truck traffic and wider truck turning radii. Turning radii become hazardous when modern windmill components are transferred off the terminal. Some of these components can exceed 200 feet in length. Current conditions create delays and conflicts at the at-grade railroad and trolley crossings on nearby city streets that serve the marine terminals as well. Overpasses at some intersections are planned, but greatly exceed available local budgets. The volume of truck traffic on local streets is limited at both of these commercial marine terminals resulting in longer truck routes to nearby Interstate 5. Supporting infrastructure for the B Street Cruise Ship Terminal is generally adequate when one cruise ship is on a visitation call. When cruise ships are restocking ship stores or when multiple cruise ships are in port, truck traffic and passenger vehicles exceed parking availability and local roadway design capacity.

Sea Port of Entry Assessment Grades

Infrastructure Assessment Grade – Sea Port of Entry			
Facility	Current Adequacy	Future Adequacy	Combined Grade
National City Marine Terminal	B	C	B-
Tenth Avenue Marine Terminal	C	D	C-
B-Street Cruise Ship Terminal	C	D	C-
Sea Port of Entry - Average Grade: C-			

What You Can Do

- Become an informed citizen by improving your understanding of the ports of entry infrastructure issues that threaten the quality of life in San Diego County.
- Stay informed, form your own opinion, and regularly express your opinion to the policymakers and regulators who influence the ports of entry infrastructure you rely on.
- Keep abreast of the major issues being discussed and considered by the local agencies. Let them know what you think.

Sources

- Finding the Balance: A Shared Border, US Chamber Of Commerce 2009. www.uschamber.com/reports/finding-balance-shared-border-future
- The 2008 California-Baja California Border Master Plan. www.borderplanning.fhwa.dot.gov/documents/baja_complete.pdf
- Several individual agency surveys

	2005	2012
Levees/Flood Control/Urban Drainage	C-	C-

San Diego County contains a wide range of climates as a result of the differences in elevation – sea level to mountains. Average annual rainfall in the county can range from nine inches along the coast to 44 inches on Palomar Mountain, resulting in diverse stormwater-related challenges. The region has a history of flooding events which have affected all jurisdictions. As a result, all incorporated cities and the County of San Diego grapple with the flooding issues. There are over 2,600 miles of flood control systems, including levees, in the county which are separately maintained by each jurisdiction within their respective boundaries. Some systems are decades old and undersized, thereby increasing the public risk while reducing public safety. For example, some drainage facilities in the more established urban areas were built in the first half of the 20th century and have far surpassed their design life. Additionally, they were originally designed for less capacity than current standards require. Because flood control is managed by each jurisdiction, the cost to upgrade and maintain these systems is extremely steep.

The economic downturn has added to the lack of funding available for infrastructure projects and maintenance for existing facilities.

The problem is further compounded by environmental regulations which eliminate most cost-effective solutions. In addition, weather patterns suggest that seasonal average rainfall totals will increase for many years to come in Southern California. As resources diminish and environmental restrictions increase, the ability to maintain existing facilities is becoming increasingly difficult.

Unlike most large populated counties, flood control for the region is not managed by one agency, but rather the County of San Diego and each city is required to manage its own system within its jurisdictional boundaries. These efforts are undertaken through a variety of funding sources ranging from special fee programs to general funds. Since there is not a unified approach to address flood control, garnering public support for funding efforts is very difficult. As it is, municipalities are not keeping pace and losing more ground in the ongoing efforts to manage existing infrastructure. If the current trend in funding for flood control facilities and urban drainage systems continues, the region could face a deficiency in excess of \$1 billion in the next 20 years.



Flooding in 2004 on Central Avenue in Bonita, located in southern San Diego County.

In an effort to determine the current state of the levees, flood control facilities, and urban drainage systems, a survey questionnaire was distributed to 18 cities and the County of San Diego. The survey focused on the condition, capacity, and operation of existing facilities and treatment systems, as well as plans for system improvements and long-term funding. Anonymity and confidentiality were provided to the municipalities participating in this survey.

Background

Levee protection, flood control, and adequate urban drainage systems are critical for protecting lives, properties, and businesses. Levees provide protection by keeping flood waters away from residences, businesses, critical care facilities, fire stations, and transportation corridors. Flood control systems are essential for the same reasons as levees but on a larger scale, and have other components. Urban drainage systems also provide protection but are limited to areas west of the mountain divide that divides the county approximately in half.



Sweetwater River levees in southern San Diego County, which were recently decertified by FEMA and are undergoing recertification at a significant cost.

For the most part flood protection is not a major concern for San Diego county residents. The temperate climate and abundant sunny days lull people into a false sense of security. However, this region has experienced three federally declared emergencies related to storm events since 2004. Homes, roads, and drainage systems have been damaged as a result of these disasters. Furthermore, the region is susceptible to wildfires which reduce the effectiveness of flood control systems as a result of erosion and debris loads.

Condition

Levees – Changes to the Federal Emergency Management Agency's (FEMA) guidelines for levees caused some local levees to be decertified. As a result, areas behind decertified levees were added to the floodplain. Homes, schools, and businesses in decertified areas may be required to obtain flood insurance until the levees can be proven to be secure. There are approximately 32.50 miles of levees in San Diego County. Not all of the levees qualify under FEMA's revised standards. The County of San Diego spent \$200,000 to evaluate two miles of the Sweetwater River levee as part of the accreditation program. At a cost of over \$100,000 per mile to conduct the analysis and prepare the necessary paperwork to FEMA for accreditation, and without a dedicated funding source for this work, it may be many years before all levees in this region will be recognized by FEMA. In the meantime, areas behind non-accredited levees are not recognized by FEMA as having

flood protection; therefore, most businesses and homes in these areas are required to have flood insurance even if they are unlikely to ever experience flooding. There are approximately 15.75 miles of non-accredited levees, some of which are in need of repairs.

Flood Control – Some existing flood protection facilities were built to handle less than a 100-year event. At a minimum, these facilities need to be retrofitted to provide flood protection for the 100-year level for public safety. However, the cost to upgrade these facilities could exceed \$250 million per large municipality. In addition, some facilities have reached the design life and are starting to fail. For example, during the December 2010 storms, problems with drainage systems occurred throughout the county with a notable failure of 54-inch corrugated metal pipe (CMP) which resulted in a repair cost of approximately \$500,000. More recently, in September 2011, the failure of a 30-inch CMP will cost upwards of \$750,000 to repair. Each failure not only affects the community, but takes precious funding from other projects which have to be delayed in order to cover the repair costs. Other significant failures will most likely occur as existing systems exceed their design life or fail for other reasons, such as insufficient capacity or maintenance.

Urban Drainage – As populations increase, so does the amount of impervious areas such as streets, parking lots, roofs, etc. This has a direct correlation to the amount of runoff. To address the increases in runoff, jurisdictions are expanding urban drainage systems. In addition, low impact development and hydromodification requirements are enlarging the footprint of the drainage system and elevating maintenance frequencies. For example, more stormwater basins are required and they must be cleaned out regularly. While new facilities are coming on-line, the older facilities are failing or have inadequate capacity. As stated above, failures of CMP drainage systems are resulting in significant repair costs. Municipalities are struggling with the cost to maintain current systems and do not have enough resources to take on preventative measures to address aging CMP.

Flood Plain Management – A major part of the municipalities flood control program includes mapped flood plains which consist of lines on maps that identify the extent of the flood hazard area locating the 100-year flood plain and the floodway. Instead of using concrete or riprap banks to define the limit of flooding, lines on these maps control the location of development by keeping it out of the flood prone areas. Most of the flood plain maps also have a FEMA Flood Insurance Rate Map (FIRM). For instance, the San Diego River, downstream of the 163 freeway bridge, has a FIRM that shows the flood plain and floodway through the Fashion Valley area.

The unincorporated area of San Diego County includes about 250 miles of mapped flood plains. Other jurisdictions have mapped flood plains as well, however the total length of those were not determined at the time of this report. Most of these maps were completed in the 1970 thru the early 1990 time period. Thus they reflect the condition of watercourse

20 to 40 years ago. During the recent time period there have been major changes to the watercourses. Floods have caused erosion and sedimentation. Some sections have extensive riparian growth. Impacts from development, sand extraction, and various forms of development have changed the stream beds so that the maps no longer reflect conditions present when the maps were produced. Thus the flood hazard identified by the maps may no longer be correct. In addition, the design of most of the bridges and other structures in major watercourses is based on the hydraulics of the flood plain maps. If the water course has changed, the structures may be overtopped or fail in a major flood.

It is probable that one quarter of the mapped watercourses in the unincorporated area need to be re-mapped. The cost for re-mapping with current watercourse conditions would be in the order of \$2 million. There would be an additional cost for updating the FIRMs.

Capacity

Levees – The approximately 15.75 miles of non-accredited levees are not recognized by FEMA as having the capacity to provide flood protection. Unless these levees obtain accreditation, the areas behind them may be required to obtain flood insurance at a significant cumulative cost.

Flood Control – According to survey responses, over 50 percent of existing facilities have inadequate capacity based on the 100-year standard. This percentage will continue to increase over the next 20 years given deteriorating conditions, inadequate maintenance, and predicted rainfall trends.

Urban Drainage – These systems suffer the same fate as flood control facilities. A majority does not meet the current standards and will continue to underperform for the next 20 years unless changes are made.

Operation and Maintenance

Jurisdictions are struggling to operate and maintain levees, flood control facilities, and urban drainage systems. Despite efforts to maximize their allocated resources, in most cases it is not enough just to meet the demand on the systems and maintenance restrictions, other factors such as meeting environmental requirements, are delaying the work. Increased environmental regulations including additional mitigation for ongoing maintenance of flood control facilities are driving the costs up and forcing jurisdictions to reduce the amount of systems to annually maintain.

In addition, aging and underperforming systems are increasingly impacting the abilities of jurisdictions to keep pace with maintenance efforts. The average design life of most flood control facilities is between 25 and 50 years. Funding for the eventual restoration or replacement of these facilities needs to be considered. As stated above, the lack of a

dedicated funding source or a comprehensive approach to solving these challenges on a regional basis is a major challenge, leaving individual jurisdictions to fend for themselves

Public Policy Considerations

Levees and flood control facilities provide multiple benefits on top of their primary function, including water quality treatment and recreational use. The public perception is that these systems will provide continual protection even when the reality is that they are failing or at the brink of failure. The County of San Diego and local cities have identified many of the problems and developed solutions; however, economic conditions and lack of available funds have stymied their ability to enact some of the measures to provide needed flood control protection.

Planning

Most municipalities have prepared a Master Drainage Plan or multiple Plans which provide information on the existing flood control systems as well as the proposed systems needed to meet the current standards. Some Plans call for drainage systems that serve multiple purposes including water quality benefits. Most of these Plans contain a prioritization of capital improvement projects done on a jurisdictional basis because San Diego County does not have a regional flood control district.

Sustainability and Public Safety

Limited funding for ongoing maintenance and capital improvement projects makes for a bleak outlook for flood protection and urban drainage systems. As the County and the cities strive to build environmentally responsible and sustainable facilities, the cost to maintain them will significantly increase. Dwindling resources for maintenance will allow for vegetation to grow rampant, thereby choking natural systems or systems that are subject to sediment accumulation, and will likely put public safety at greater risk due to the increased potential for more flooding. In addition, some urban drainage systems are unsustainable because of factors including age of pipe, corrosion due to soil types, and abrasiveness of flows. Unfortunately, a large amount of these systems are located below major roadways and structures which make for expensive repairs. Jurisdictions have had to make the tough decision whether to build capital improvement projects or spend the same money on preventative maintenance instead. Therefore, as a result of significant deferred maintenance, emergency repairs are becoming a more common practice.

Security

Levees, flood control facilities, and urban drainage systems need to be protected. These infrastructure elements provide protection for populated areas. There are varying levels of security around them. Some areas are protected by fences without controlled access while others do not have any security measures.

Economy

The economic climate in Southern California continues to be depressed. A significant, prolonged decline in property values and the subsequent decline in property tax revenues have negatively affected the much needed revenues for maintenance and system upgrades. Federal and state agencies have offered grants, but these have not materialized in a timely manner for San Diego County. Meanwhile jurisdictions must maintain and build levees, flood control facilities, and urban drainage systems to keep pace with the needs of a growing population. All this has to occur even as the region's economy struggles to recover. It is unfortunate that the lack of available funds has prevented the region from take advantage of the significantly lower construction costs which has occurred during these tough economic times.

Funding

Looking forward, the efforts by the cities and County of San Diego to improve infrastructure will be a steep uphill climb. The economy will eventually recover, but that time is not today and does not appear to be anytime in the near future. Meanwhile, all elements of the region's infrastructure continue to age and show signs of potential failure. Even during periods of economic prosperity, infrastructure funding for flood protection improvements is insufficient to keep pace with the needs of the region. There is often political pressure to build new capital projects rather than maintaining existing infrastructure.

Current Funding Adequacy

Each jurisdiction allocates resources towards the operation and maintenance, and capital improvement projects. The current allocations range from \$51,000 to \$6,000,000 per year, depending on the size of the jurisdiction. With more than 2,600 miles of levees, flood control facilities, and urban drainage systems, there are not enough resources to support all the preventative measures needed or to pay for the design and construction of upgrades to aging facilities.

Despite the limited resources, jurisdictions continually operate and maintain the existing systems. In addition, a small amount of capital improvement projects are being developed or are under construction.

Future Funding Adequacy

While there are existing funding efforts, it is insufficient to meet future regional needs. If current revenue processes are left unchanged, this region will never be able meet replacement goals. There is a continual need for additional funding to support existing efforts including operation and maintenance of existing facilities as well as construction of future facilities. A funding strategy is needed to bridge the gap between what is provided versus what is needed. If the rates of current funding efforts are not increased, the region could see a deficiency exceeding \$1 billion over the next 20 years.

Past Trends and Future Projections

There are 19 jurisdictions managing flood control programs in the region. Each of these agencies is contending with the adequacy of the flood protection they provide and the degradation of the facilities over time. Since each jurisdiction is responsible for only the areas within its boundaries, there are no unified plans for a regional approach. State and federal grants are trending towards regional, watershed-based integrated planning and funding efforts. The cities and County should develop a regional watershed-based plan to improve their chances in obtaining grants. The plan must be comprehensive and incorporate levees, flood control, urban drainage systems, and water quality protection. Without this plan, the region will not be competitive for future funding.

With a regional plan, elected officials can support it and look for opportunities to obtain funding to implement it. In addition, a regional plan can be incorporated in other integrated regional watershed planning efforts to increase chances for receiving funds.

What You Can Do

One certainty regarding the region's efforts to address levees, flood control facilities, and urban drainage systems issues is that it cannot step back and reduce its efforts. The quality of life in the region is interconnected with flood protection. Improving levees, flood control facilities, and urban drainage systems will require additional infrastructure.

Recommendations to improve flood protection infrastructure includes:

- Development of an integrated regional watershed-based flood protection plan.
- Support and encourage funding to close the gap between current funding and what is needed to meet future needs.

Finally, work with your local, state, and federal elected officials to increase investment in regional levee, flood control, and urban drainage systems to eliminate critical deficiencies that threaten our quality of life. Support planning and legislation at all levels of government to address structural and nonstructural solutions that reduce the risk of flooding of property and protect lives from the devastation of floods.

Sources

- San Diego Association of Governments, Regional Comprehensive Plan, 2004
- Jurisdictional Urban Runoff Management Plan, 2008, from the County of San Diego and the cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, and Vista.
- Several individual agency surveys

2005 2012

Parks/Recreation/Environment**B-****C**

Parkland funds from the Year 2000 “2000 Park Bond Acts” are depleted, grant funds from all sources have been reduced while competition remains high and availability of funds for long term maintenance obligations are evaporating due to the uncertain forecasts for economic recovery. The overall grade level for parks, recreation and environment has declined. In 2009, the ASCE National Report reported that California had an unmet need of \$1.7 billion for its state public outdoor recreation facilities and parkland acquisition. Between 2005 and 2012 the ASCE rating overall for San Diego County Parks, Recreation and Environment has declined from a level B- to a D+ grade.

Parks and open space are a valuable component to the region’s social and physical infrastructure. They benefit communities by providing residents and visitors with opportunities to renew mind, body, and spirit in healthy outdoor settings. Recreation programs, team sports, and other activities improve personal health and wellness while building confidence, independent thinking and self-discipline. Parks improve visual quality within urban areas, provide educational opportunities, and serve to preserve historic and cultural resources. Parks and open space promote livable communities and improve quality of life.

The public’s recreational needs and prioritization of agency goals must be combined for successful future parkland management. Through public outreach programs Southern California park users can be encouraged to participate in the development of parkland management programs that affect cultural, historic, economic and educational facilities in their communities.



Parks improve the visual quality of our lives in urban areas

Background

Economy

The nation’s economic crisis coupled with California’s own debt crisis has placed a heavy burden on park development, operation and maintenance within the state. Even before the financial crisis reached its peak in 2007-2008, a 2006 ASCE Statewide infrastructure report card gave a D+ grade in the condition assessments for parks within the State of California. This information was not used to determine the overall grade for San Diego

County. In 2009, the ASCE National Infrastructure Report Card reported that there was a public need for \$1.7 billion in additional park facilities within the State of California, including land acquisition costs for future parks. The downturn in the economy has had a devastating impact on the park system.

The impact on further budget restrictions was exemplified on November 2, 2010 by California voters who rejected California Proposition 21. This proposition was intended to establish a Vehicle License Fee to support Parks, which would have increased vehicle license fees in the state by \$18 per year and raise about \$500 million annually in dedicated funds for the state's 278 parks. Unable to meet the growing need for additional park services and coupled with the defeat of Proposition 21, on May 13, 2011, the State of California announced that 70 of its 278 parks will close indefinitely by July 2012 in order to reduce the State's overall budget deficit.

Evaluation

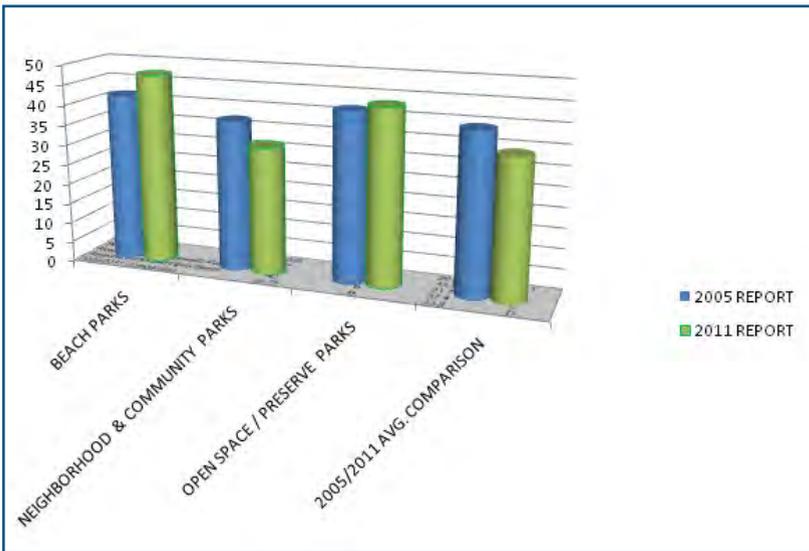
Each of the three categories of: Parks (Neighborhood / Community Parks, Regional Parks and Open Space, and Beaches), Recreation, and the Environment, were graded independently of one another and evaluated according to three criteria: Capacity, Condition, Operations & Maintenance, Public Safety, and Funding. The survey was completed in two parts. The first part of the survey identified existing adequacy of the infrastructure for the next five years, with the second part of the survey forecasting the same infrastructure components listed above from six years to 20 years. A total of five possible points could be awarded per criteria: zero point for poor infrastructure, 3 points for fair condition, and 5 points maximum for the existing adequacy or good condition of the infrastructure. Adequacy of a short term (1 to 5 years) and long term (6 to 20 years) forecasts were assessed. Therefore, a total of 25 points could be achieved for the short term and an additional 25 point could be earned for long term parkland assessments (5 possible points x 5 criteria = total category score). After the parks assessments were complete; their total scores were averaged for the short term and long term grade (Table 1).

Table 1 - Grading Schematic	
Category Score (Points)	Grade
40 to 50	A
40 to 44	B
35 to 39	C
25 to 34	D
0 to 24	F

A total of 180 parks were assessed within the County of San Diego obtaining the following results for 2011:

	Beach Parks	Neighborhood Parks	Community Parks	Open Space and Preserves
Score	A	D	D	B
Points	47.5	34.0	29.4	43.5

When comparing the 2005 ASCE Report Card to the 2012 findings the following illustrates the overall changes per category:



The average of all four parkland ratings is 36.8 points, falling in the C score range. For the purposes of this report, the overall average is identified as a C.

When comparing against previous ASCE reports, it is evident that there is a trend taking place where parkland ratings have declined. The following table will illustrate the trend:

Description	San Diego 2012	National 2009	California 2006	San Diego 2005
Parks/Recreation/Environment	C+	C-	D+	B-

Each category is summarized below:

Beaches: Grade A

Recent surveys of the San Diego region's beaches have shown them to be in very good condition. According to the Heal the Bay's 2011 Annual Beach Report Card, San Diego County's water quality of the monitored locations received A or B grades. There are two beaches that repeatedly scored poorly, earning San Diego County's only poor grades (F). These were at the San Luis Rey River outlet in Oceanside and the Border Field State Park at Monument Road which floods during winter rain events, carrying runoff debris, silt and sediment from the City of Tijuana, Mexico. Overall the beaches of San Diego County continue to be rated a Grade A.



Neighborhood / Community / Regional Parks: Grade D

Recent surveys of the San Diego Region's neighborhood and community parks identified that the existing adequacy, over the next five years and long term stability of between six years and 20 years, reflects a significant need for additional parkland funds. The existing facilities and forecasts to improve and maintain good infrastructure conditions and the ability to properly operate and maintain facilities and create a safe place where families and friends can gather, is in a financial downfall. Existing infrastructure has exceeded its life expectancy and existing funds to repair or replace aging parkland features is not adequate. Overall, the rating for neighborhood, community, and regional parks has fallen from a Grade B to a Grade D.



Open Space & Preserves: Grade A

Recent surveys of the San Diego region's open space and preserves identifies that the existing adequacy over the next five years and long term stability of between six years and 20 years identified the overall condition and long term stability to be adequate. Since



the 2005 ASCE Report Card rating, thousands of additional acres of open space have been purchased. Through the Multiple Species Conservation Program a comprehensive approach to preserving biologically important land has been implemented. Open space enhances our quality of life by protecting our natural resources, limiting urban sprawl and by providing public access to hiking and riding trails. Overall, the rating for open space and preserves has improved since the 2005 ASCE Report Card from a Grade B to a Grade A.

Planning

Acknowledging the current economic environment, Parks and Recreation agencies will need to become more creative in their use of available funds and in methods of operating and managing land and/or recreational facilities. New partnerships, sponsorships, flexible Board Policies, alternative sources of funding, reduction of energy consumption, and alternative methods of operating are required.

Photovoltaic solar producing energy from the sun and replacement of natural turf with artificial turf to conserve water are just a couple of examples in which ongoing parkland expenditures can be reduced and help subsidize ongoing operations and maintenance costs. In other words, Parks and Recreation agencies will need to change how they have operated in the past. Cost recovery efforts along with critical resource allocations and revenue enhancements are needed to ensure the sustainability of parks and recreation activities. As the economy makes it more difficult for families to pursue vacations away from home, affordable sources for exercise, entertainment, education, and protection of our environment is forecasted to be in greater demand at parks.

In the San Diego region, 15% of the native coastal sage scrub habitat and only 5% to 10% of California's original riparian habitat exists today with much of the remaining habitat in a degraded condition. In San Diego County over 200 plants and animal species are listed as threatened, rare, sensitive, or candidates for special protection – more than any other comparable land area in the United States. Planning for the future of parklands will require energy conservation, partnerships, sponsorships, fees and other changes to the way business has taken place to-date.

Security

Since 2005, volunteers for the Regional Task Force on the Homeless have performed surveys every January to count people sleeping on the streets. In 2011, they found 9,020 sleeping outside (unsheltered) or in emergency and transitional housing. This is a 30% increase since the lowest count of 6,326 in 2007. Unsheltered returning veterans from the war often are plagued with individual challenges such as post traumatic stress disorder, mental illness, and disabilities and are often participants in domestic violence.

Along with such encampments there is a perceived threat to park patrons. The unintended consequence of individuals forced to camp in parks ultimately results in a decline of participation in recreational activities by neighboring families. .

What You Can Do

Support local and county park changes:

Funding – Develop funds through restructuring how day-to-day business takes place and how parks get maintained. Through public/private partnerships, energy savings, water conservation, and other programmatic savings, the shortage of operating funds can be subsidized.

Board Policy Changes – Launch a countywide initiative that will transform the way the County does business by establishing partnerships with third party vendors to construct, operate, and maintain park facilities such as dog parks and zip lines in order to provide essential public services and new and improved facilities to the community that would otherwise not be possible due to lack of funds.

Outreach – Broaden and strengthen the public's familiarity of its parklands that includes sports related facilities, recreation programs and activities, and existing natural and cultural resources and preservation programs for future generations to enjoy. Outreach efforts can attract families to parks and can include beneficial programs such as reduced or free lunches for seniors, and educational and outdoor activities that can assist children and adults to develop healthier physical and psychological life styles.

Nature – The county is home to 70 miles of scenic beaches and is the second most populous county in California with over 3 million people covering 684 square miles of mountains, grasslands, and desert landscape that includes a large variety of wildlife. San Diego County is one of the most biologically rich counties with the highest concentration of threatened and endangered species in the United States. Getting out in nature and exploring these valued treasures will help people realize the need to preserve this natural richness for the future.



Lease Agreements – Expiring contracts should be analyzed and renewed with competitive market lease rates.

Facilities – Joint-use agreements with school facilities and other groups can reduce operational costs while benefiting the public.

Volunteers – Partnering with non profits and outreach to local community members to volunteer in areas of interests.

Attractions and Programs – New park attractions and programs placed in the appropriate areas can fulfill the needs of the public while producing revenue through operating partnerships or the utilization of existing staff.

Private Development Ownership – This tool allows designated park sites to be privately operated, maintained, and developed. The private operation and development of a publically owned facility has the potential for private revenue (shared or not shared).

Sources

- County of San Diego, California Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2010
- Several individual agency surveys

	2005	2012
K-12 School Facilities	C+	C

The change in grade from 2005 to 2012 only gives a hint of the underlying situation affecting school infrastructure currently. Of the five rating criteria, three are above average (Capacity, Condition and Public Safety) and two are well below average (Operation & Maintenance and Funding). This points out the current dilemma in public school facility management: while recent passage of construction bonds for numerous (but not all) school districts has improved the capacity, condition, and public safety of many schools in our county, the current lack of funding to maintain 720 school sites and the poor prognosis for future funding means these facilities will deteriorate and become deferred maintenance problems in the future. With the State of California's 'flexible use of restricted funds' strategy for helping to solve the present monetary situation, most school districts have drained the funding pool of restricted funds for maintenance and have no future mechanism in place to backfill or replace these funds. Accordingly, there is a high probability that districts will reduce their maintenance budgets and reduce or eliminate their deferred maintenance budgets. Both actions will result in accelerated deterioration of school facilities.

Forty-three school districts in San Diego County educate approximately 490,000 students at 720 school sites in grades K-12. These districts deliver educational services in the form of "Union Districts" which are comprised of specific grades, such as high school only and "Unified Districts" which include K-12 instruction. These districts also provide specialty education such as pre-school, adult education, court school, special education for children with mental or physical handicaps, home school, and charter schools. These districts plus numerous, mostly small private schools make up the total of San Diego County educational institutions.

Background

School facilities were rated in five categories. These categories are described below:

Capacity: (Ability to meet current and future needs in adequate facilities) With declining enrollment due to the current economic conditions, plus recent passage of construction bond measures at numerous school districts, the capacity of our schools is in good condition and is expected to remain that way for the foreseeable future. In addition, the severe shortage of funding for districts operating budgets currently and projected for the future typically results in teacher (and other personnel) layoffs and means larger class sizes...and more capacity. This category has a high rating.

Condition: (Ability to provide adequate facilities to support the educational needs) - With the recent passage of construction bond measures at numerous districts in the county, the general condition of school facilities has significantly improved. However, the bond measures typically only improve some of facilities on a school site so there are still plenty of inadequate facilities needing work. In addition, the current and projected future lack of maintenance funding have the potential to result in accelerated deterioration for modernized and new facilities and continued deterioration of facilities not covered by bond measure funding. In spite of this bleak future, districts graded the current condition of their facilities with a high rating.



New science classroom building replaced 1930s era former science building with state-of-the-art facility and equipment.



Typical 1940-50s era general classroom building still in use throughout the county...in dire need of maintenance or replacement.

Operation & Maintenance: (Ability to provide adequate operations and maintenance support to keep facilities in good condition) With the current economic conditions causing significant reductions in general fund budgets, this has resulted in a reduction of funding for facility maintenance currently and for the foreseeable future. This reduction includes layoff of maintenance workforce, reduced funding for maintenance materials and reduced funding for deferred maintenance. This has and in the future will cause a deterioration of facilities and thus this category has a low rating.

Public Safety: (Ability to provide a safe environment for students, staff and the general public) School districts in general view this as a priority so needed work gets accomplished in spite of budget pressures. This category has a high rating.

Funding: (Ability to fund routine, deferred and major maintenance to maintain school facilities in adequate condition so they reach their expected life) With the current economic conditions and reductions in school budgets, most districts see this as a current and long term threat to providing adequate maintenance to these facilities. In addition, many districts have reduced their maintenance budgets and reduced or eliminated their deferred maintenance budgets to covered general fund expenses...and they don't plan to backfill this loss of funding in the future. Accordingly, it is expected that the backlog of deferred maintenance will grow and threaten the condition and economic life of school facilities now and in the future. This category has a very low rating.

Public Policy Considerations

The key issues are:

- School districts in general have shifted funding from facility maintenance to higher priority educational needs. Although this is understandable, they need to maintain a “core” funding level for maintenance to minimize facility deterioration. Facility managers should report the condition of facilities to their governing board on an annual basis to allow for balanced decision making and reallocation of funding as needed.
- School districts should push the concept of sustainable designs to save operating costs and reduce the pressure on the general funds.
- School districts should continue to fund safety and security measures as they have in the past.
- Unfunded mandates from the state create pressure on the general fund and diminish the ability to deliver a quality education in adequate facilities and should be eliminated or minimized.

Past Trends and Future Projections

- Enrollment – Currently enrollment is trending down for middle and high grades so capacity will not be an issue for the immediate future. This cycle tends to move with the economy.
- Funding for facility maintenance is marginal even in the best of times. Currently and for the foreseeable future, it is inadequate. Accordingly, it is important for district staff to report to their governing board on an annual basis as to the condition of their facilities. This will allow for rebalancing of budget priorities as needed.

What You Can Do

- Support the financing of school infrastructure programs at the local, regional, and state levels.
- Inform your friends and colleagues of the infrastructure needs of our schools.
- Volunteer to serve on the Citizens’ Bond Oversight Committees and/or other organizations that deal with school facilities.

Sources

- Several individual agency surveys

2005 2012

Solid Waste

-

B

Solid waste infrastructure provides an essential public service to the citizens and businesses of San Diego County. In San Diego County, many aspects of solid waste management are privatized. Collection of waste and recyclables is generally performed by private industry under franchise agreements with the cities. The City of San Diego varies slightly as it provides municipal residential waste and recycling collection; however private industry provides commercial services under franchise agreements. Recycling processing, manufacturing facilities, and transfer stations are operated by private industry. The countywide system of landfills includes three privately owned landfills, one City of San Diego landfill, and two landfills operated by the United States Marine Corps for its exclusive use. The County of San Diego's Siting Element concludes that the region has sufficient waste management infrastructure to comply with state requirements.

Background

The Integrated Waste Management Act of 1989 (known as AB 939 or the IWMA) was enacted by the California Legislature to reduce dependence on landfilling of solid waste, and to ensure an effective and coordinated approach to safe management of all solid waste generated within the state. The IWMA established a hierarchy of preferred waste management practices: (1) source reduction (waste prevention), to reduce the amount of waste generated at its source; (2) recycling (or reuse) and composting; (3) transformation; and (4) disposal by landfilling. The IWMA required disposal of waste by the local jurisdictions to be cut by 50 percent by 2000. In 2007, SB 1016, the Per Capital Disposal Measurement System bill, changed diversion reporting from a percentage calculation to a target of daily pounds per capita disposal based on each jurisdiction's average waste generation from 2003 to 2006. This means that jurisdictions no longer share the same target; instead, targets for solid waste diversion are tailored to each jurisdiction.

The Countywide Integrated Waste Management Plan describes the systems, strategies, and infrastructure behind the region's management of solid waste. This citizen's guide will briefly summarize the state of solid waste infrastructure.

Condition

In the past 20 years local government, in partnership with private industry and the public, has held disposal rates below those allowed by the IWMA. Each jurisdiction (18 cities and the unincorporated county) in the region is responsible for its own integrated solid waste management planning, implementation, monitoring, public information, budgeting, and enforcement. In some cases, these duties are delegated to a franchised hauler. All of the cities and the county have franchised collection systems.

Capacity

When talking about capacity, the best view to take is the “per day” amount of disposal to landfills, the amount diverted from landfills and the change over time. Each landfill is permitted at a capped maximum number of truckloads each day. The objective of an integrated management approach to solid waste is to ensure that landfills last to provide disposal as long as possible. A meaningful discussion about capacity, then, involves how well the county is doing at reducing its dependence on landfilling. Implementation of individual jurisdictions’ recycling and diversion programs has been a major factor in moderating the increase in disposal tonnage. Additionally, in accordance with the regional Household Hazardous Waste Elements, six permanent collection centers for household hazardous waste have been established.



Daily operations in a San Diego landfill

Operations and Maintenance

The City of San Diego operates the region’s only municipal landfill, Miramar Landfill. The City has several innovative recycling programs located around the landfill property. Before the entrance to the landfill, customers are able to access a recycling center, a donation and reusable goods drop-off station, and a household hazardous waste center. A convenient drop-off area for recycling source-separated construction and demolition materials is located immediately after the fee booth. The City operates the Greenery, a compost facility that annually processes over 100,000 tons of yard trimmings and food scraps into valuable mulch and compost. Although food scraps have been accepted from large facilities such as PETCO Park, SeaWorld, UCSD, and the Marine Corp Recruit Depot for some time, a commercial food scrap collection route has recently been launched to offer this service to smaller businesses.

Privately operated landfills include Sycamore, Otay and Borrego landfills. There are also numerous privately operated transfer stations and recycling facilities throughout the county. Various studies, ballot initiatives, and proposals for new and expanded facilities have occurred in recent years.

Public Policy Considerations

Planning

AB 939, the Integrated Waste Management Act, gave local government the responsibility to reduce the amount of solid waste being disposed in our landfills. New legislation and regulations are likely to provide new challenges and will place additional responsibilities

for managing and reducing the solid waste stream on local government, the community, and private industry. On October 6, 2011, Governor Brown signed AB 341 into law. The new law sets a statewide goal solid waste diversion rate to 75 percent by 2020. It also requires that multifamily residential complexes, businesses, including commercial and public entities, develop recycling programs by July 1, 2012. Additional legislation is being introduced to expand the role of product stewardship to manufacturers, requiring private manufacturing companies to minimize the production of waste during the manufacturing process and to provide “take back” programs once the product has reached the end of its useful life. In addition to legislation, new regulations continue to be developed that prohibit the disposal of harmful and/or hazardous wastes.

Although the Miramar Greenery is a fine example of a well-run compost facility, it is the only facility in the region that is able to accept food scraps for composting. In order to maximize diversion from hospitality sectors, large institutions and residents, additional facilities will need to be sited and permitted. Expanded infrastructure for food waste composting will also assist jurisdictions to comply with AB32, California Global Warming Solutions Act. The Local Task Force advisory groups for integrated waste management planning are working on ways to increase and enhance diversion of organic materials throughout the region. In addition to finding ways to overcome financial challenges faced by composting facilities, changes to laws, ordinances, and regulations may be necessary to facilitate the siting of composting facilities.

Prior to creation of ordinances requiring Construction and Demolition (C&D) recycling, these materials comprised up to a third of materials landfilled in the region. There is now a strong infrastructure for recycling these materials. Unfortunately, many high quality reusable building materials, such as lumber and other durable fixtures, are disposed or recycled rather than more economically reutilized. On a per-ton basis, sorting and processing durable reusable goods can sustain 60 times more jobs than landfilling. San Diego has a small formal and larger informal network of building material reuse; however the region lacks a large facility or warehouse to temporarily store the materials to augment the waste diversion and job creation potential of this latent industry. Examples of used building material facilities, such as Urban Ore and Rebuilding Inc. can serve as a model for industry and a potential public-private partnership to increase diversion and job creation. Increasing deconstruction in the region would complement this activity as well as providing reusable materials for such a facility.



EDCO Construction and Demolition Recycling Plant

Sustainability

San Diego County's solid waste infrastructure is an integrated system that is built upon partnership between local cities, the county, private industry, environment proponents and community stakeholders. As regulations and/or new state laws are adopted by the state, the cost to implement new and expanded programs is not generally funded by the state (except for limited discretionary grant funding).



EDCO Mixed Recycling Plant in Lemon Grove

Economy

Many jurisdictions rely upon fees placed on each ton of waste disposed to generate revenues to pay to implement waste reduction programs and educational campaigns. Unfortunately, with recycling successes and the sluggish economy, disposal tonnages and resultant revenues has decreased significantly, more than 25 percent in the past five years. This revenue shortfall is likely to negatively impact the service levels of waste reduction programs and educational campaigns if not remedied.

Funding

Current Funding Adequacy

In San Diego County, publicly funded infrastructure in this discipline is not a simple matter of building and operating landfills. Instead, it is a matter of using multiple strategies to reduce and manage waste. Publicly funded infrastructure includes assistance grants to recycling facilities, and in the case of the City of San Diego, implementing methods for diverting specific types of waste, such as food waste. The region has had successes with public private partnerships to build and permit new facilities, such as the C&D recycling facilities now on line.

Future Funding Adequacy

There is no federal program that assures any infrastructure funding for projects that manage solid waste. Laws and regulations are at a state level, and state funding does not keep up with those regulations and laws, leaving local jurisdictions to use user fees or general taxes. Some jurisdictions rely on a "per ton landfilled" fee, which is lower the more successful diversion programs become, and this can be problematic. It is likely, then, that the adequacy of funding will vary greatly by both jurisdiction and strategy type for the foreseeable future.

What You Can Do

The most important action you can take in your home or in your business is to reduce waste. Look for products with minimal use of packaging. Limit your use of bottled water and emphasize the use of counter-top or under-sink water filters and reusable containers. Shift from hard copy communications and reports to electronic versions. Take a compost workshop – there are free workshops in many locations and times around the county. Recycle as much as possible and encourage others to do so. Shop and trade with stores, restaurants, and organizations that reuse, recycle, use recycled materials in their products and/or minimize packaging.



Screening finished compost

Other actions you can take:

- Continue to encourage government, retailers, and manufacturers to implement extended producer responsibility policies and practices.
- Support development of additional recycling and reuse facilities, including composting and used building material facilities, to divert resources from landfills, create jobs, and expand the economic value of discarded materials.
- Preserve and increase industrial lands zoned for recycling facilities.
- Support the transformation of landfills into resource recovery parks. A resource recovery park includes drop off areas or facilities that incentivize diversion from landfill by collecting and/or processing resources including common recyclable materials, household hazardous waste, reusable goods, compostable materials, and construction and demolition materials.
- Encourage local governments to adopt comprehensive policies favoring the purchase of recycled content materials to promote recycling market development, including rubberized asphalt concrete (RAC) and recycled asphalt shingles (RAS) for road construction, compost and mulch use on municipal facilities and projects, as well as many other materials.

You can learn more by visiting your city or county web site and clicking on "Recycle." Or visit the state's recycling site at CalRecycle: www.calrecycle.ca.gov/Recycle/.

Sources

- www.sdcounty.ca.gov/dpw/recycling/factsfigures.html.
- www.sandiego.gov/environmental-services/recycling/.

2005

2012

Surface Transportation

C

D+

This report card covers the following aspects of San Diego's surface transportation infrastructure:

- Highways
- Local Streets and Roads
- Transit

While there are other important elements of the overall surface transportation infrastructure, such as goods movement and bicycle paths, these are the three categories of facilities that most affect the traveling public in the region on a daily basis. In our past report cards, bridges were included under Highways, Local Streets and Roads. This year Highway Bridges and Local Street and Road Bridges are covered separately under the category of "Bridges." Rail bridges are still covered under "Transit."

Background

Until the 1980s, the San Diego region enjoyed a transportation infrastructure that by and large met or exceeded the demands of the traveling public. Highway engineers in the mid 20th century had the foresight to plan and build eight-lane freeways using concrete pavements, resulting in a highway system with long-lasting capacity and relatively low maintenance costs. As shown in Figure 1, the "Annual Hours of Delay per Auto" was eight

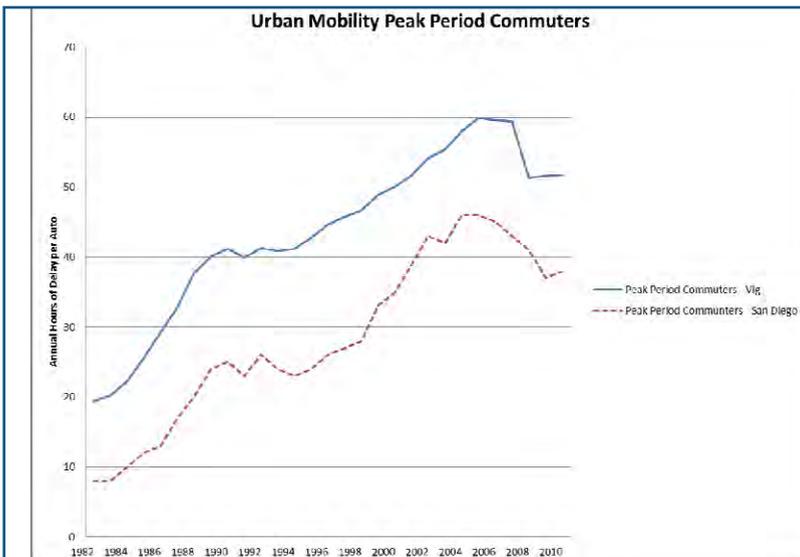


Figure 1

hours in 1982 and 1983 in San Diego as compared to 19 to 20 hours in other “Very Large Areas.” It appeared we would avoid the mistakes of Los Angeles.

In the 1980s major highway projects such as I-15 were completed and extensions began of State Routes 52, 54, 56, and 125 (largely funded through the local half-cent sales tax program known as TransNet), substantially increasing the capacity of the freeway network from 1,365 lane miles to 1,610 lane miles. Meanwhile, according to the Texas Transportation Institute’s data, the region’s local street network expanded along with new developments from 2,405 to 2,705 lane miles, and a Light Rail Transit (LRT) system began in 1980 providing relief for the I-5 south and State Route 94 corridors with additional extensions planned. In spite of these improvements in our surface transportation system, by 1990 our “Annual Hours of Delay per Auto” had grown to 25 hours, a threefold increase as compared with a doubling to 41 hours in other “Very Large Areas.” San Diego’s highway system was losing the battle with congestion and losing ground relative to other large U.S. cities. Between 1982 and 1990, annual transit ridership grew by almost 60% from 43 million to 68 million as compared to an average 10% drop in annual transit ridership in other “Very Large Areas.” San Diego’s transit ridership growth was the result of the success of the new LRT or “trolley” system serving the South Bay and Highway 94 corridors. Transit officials from around the U.S. and the world came to see the San Diego Trolley system.

In the 1990s, it became evident that population growth and associated increases in transportation demand were growing faster than the road/highway/transit system could be expanded with limited funding and growing environmental regulations. There was a dramatic jump in both the number of congested lane miles and hours of delay in the 1990s and again in the early 2000s. Lane miles of congestion of arterials and freeways grew from 2,070 miles in 1990 to almost 3,600 miles by 2005. Annual hours of delay (now measured in total person hours rather than per vehicle) grew from 36.4 million hours to over 84 million hours during this same period, while annual transit trips grew from 68 million to 90 million. In other Very Large Areas during this same period, congested lane miles increased 48% compared to San Diego’s 70% increase; annual hours of delay increased 190% compared to our 230% increase, and transit trips increased 17% compared to our 32%. SANDAG’s 2005 State of the Commute Report summarized our situation as follows: “Today (2005), not only is congestion increasing but the infrastructure to handle the traffic is not being built fast enough to keep pace. Since 1985, traffic has expanded faster than the building of new highway lanes. Sharp increases in land and construction costs combined with significant reductions in funds for transportation infrastructure have resulted in an overworked system during rush hours and more hours stuck in traffic.”

The past decade has seen dramatic increases in delay on some portions of the highway and local street system during the traditional peak hours of AM and PM commute.

Perhaps most alarming is the rate of increase of congestion. In the past few years, congestion in some areas has even become commonplace outside the traditional peak hours, extending into midday periods on both weekdays and weekends. The region's population is expected to continue expanding, from roughly three million today to four million by the year 2030, so demand for highways will surely continue to rise.

At the same time as transportation demand has outpaced transportation system improvements, the existing facilities and equipment have continued to age while the resources to maintain and operate them have dwindled. For example, as part of this study 45% to 50% of all local streets and roads were judged to be in poor to fair condition, i.e. needing repair. In all three categories – highways, local streets/roads, and transit – there are serious shortfalls in maintenance and operations funding today and the shortfalls are projected to get even worse.

2005 to Today

As shown in Figure 1, demand for our surface transportation systems peaked around 2005. In 2009, our total annual hours of delay dropped to just over 71 million from a peak of over 84 million, and the lane miles of congested arterials and freeways dropped to 3,100 from 3,600 in 2005. Transit trips increased during this period from 90 million in 2005 to a high of 105 million in 2008 and dropped to 100 million in 2010.

What has caused this significant drop in hours of delay and miles of congestion and can we expect further reductions? The data presented in the SANDAG 2010 State of the Commute report show that our lifestyle and the economy play key roles in the usage and performance of our regional transportation system. This trend of improvement in our commute appears to be linked to infrastructure improvements that have been made during the last several years and factors associated with the downturn in the economy. Roadway construction efforts during the last several years have focused on infrastructure improvements that address “severe congestion levels” – specific bottlenecks that cause an overall slowing of the system. These improvements include the completion of the I-15 Managed Lanes, Middle Segment project in 2009, cutting delays on I-15 in half, and the addition of carpool lanes on I-5 from Via de la Valle to just south of Manchester Avenue in conjunction with the construction of auxiliary lanes and interchange improvements at Lomas Santa Fe Drive resulting in a 50 percent reduction in delay on I-5. These major improvements and others like them were effective in reducing congestion.

Compounding the impact of these major improvements, overall travel within the region, measured in terms of how many miles we travel daily on average per capita, has decreased by 1.3 percent since 2006 after three decades of increases. This decline in travel per capita is shown in Figure 2 (p. 68).

Overall travel times during peak commute periods also have declined in recent years. On average, travel times have decreased by 15 to 30 percent during the morning commute period and by 15 to 27 percent in the afternoon. This is a dramatic improvement from when we had a 5% increase in just one year between 2002 and 2003.

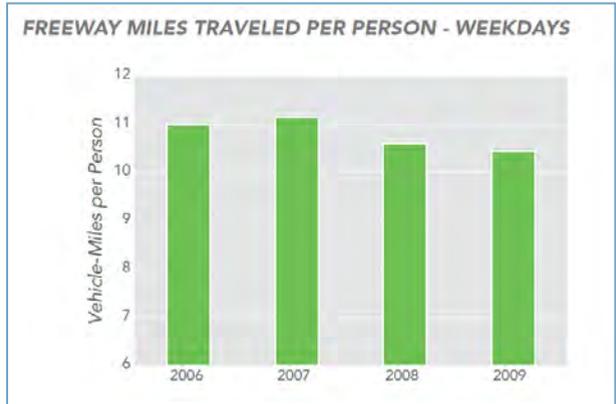


Figure 2

The effects of the Great Recession in the late 2000s and the still recovering economy are evident when analyzing the reduction of delay during commute periods, which has declined by 50 percent in the region since 2006 as shown in Figure 3. However, there is not a direct correlation since delay began declining in 2006 and the signs of economic trouble were not evident until 2007-2008. Overall, congestion

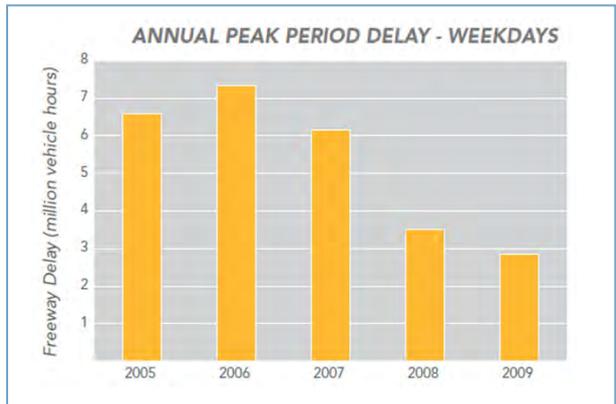


Figure 3

on the region's freeways has been relatively "moderate" (meaning speeds around 35 to 50 mph) in the past few years, with "severe" congestion (under 35 mph) dropping significantly since 2006.

Transit continues to play a pivotal role in the region, providing commuters an alternative mode of travel. Overall transit travel has increased by more than eight percent since 2006 as shown in Figure 4. The large increase in transit ridership coincides with the opening of the Mission Valley East LRT extension in 2005 serving the students and faculty of San Diego State University (SDSU). Large increases in ridership have occurred on Metropolitan Transit System (MTS) bus services serving the south half of the county and the North County Transit District's (NCTD) SPRINTER light rail service between Escondido and Oceanside, with a total of approximately 3.7 million additional passengers taking transit per year since the SPRINTER opened in 2008. With 2010 ridership data

not yet available, it is unclear whether the slower growth in ridership shown for 2009 in Figure 4 indicates a new plateau, or whether growth will continue at a similar pace as 2005–2008.

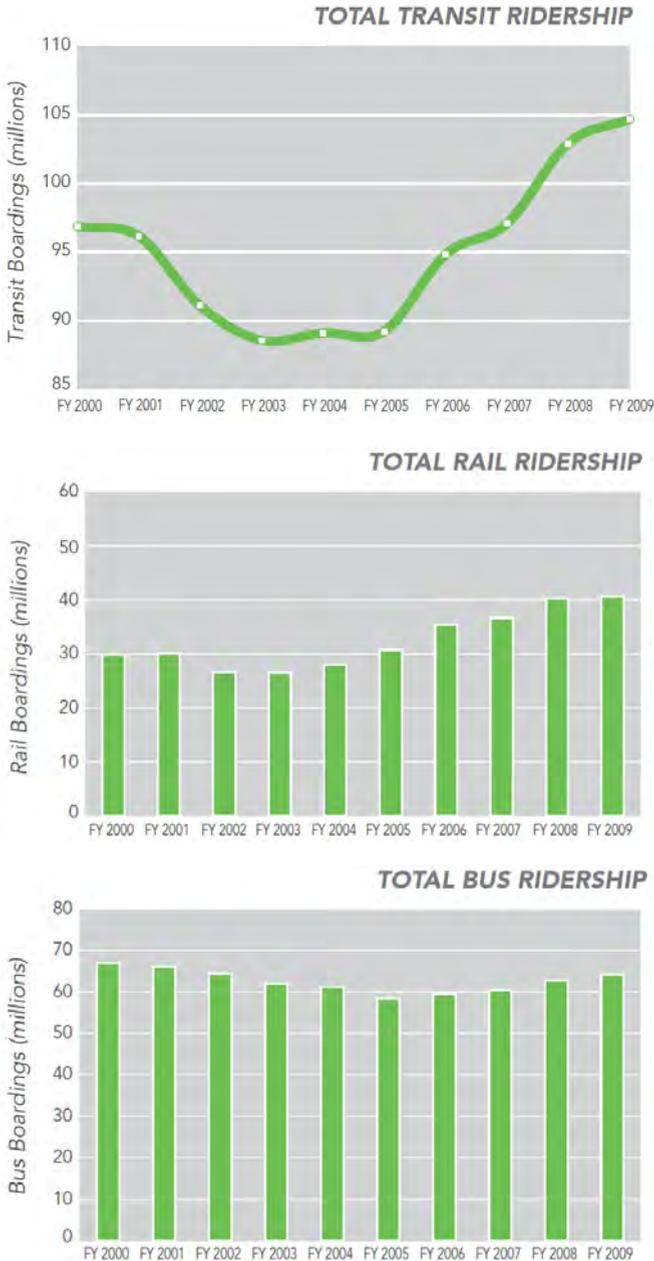


Figure 4

With the San Diego region seeing a recovering economy coupled with a reduced pace of new transportation improvements coming online, further short term reductions in congestion are unlikely; in fact, according to the Texas Transportation Institutes 2011 Urban Mobility Report and as shown in Figure 1, yearly hours of delay per auto commuter increased from 37 hours in 2009 to 38 hours in 2010, which is the first increase since the peak of 46 hours in 2005. The current SANDAG long-term growth forecast is that travel demand and resulting impacts on the transportation network will increase between now and 2050 as a result of an expected 40 percent population increase, 33 percent increase in total jobs, and 34 percent growth in housing units. To address this projected growth, SANDAG adopted in October 2011 the 2050 Regional Transportation Plan (RTP), a long-term vision for the future of our regional transportation system. The 2050 RTP lays out a network “that will meet our growing travel demand, while at the same time addressing environmental concerns.”

Funding

Over the past 30 years, transportation funding has undergone significant transformation from relying more heavily on federal and state funds (up to 70 percent), to increased dependence on local TransNet funds, our region’s local transportation half-cent sales tax. In general, federal and state formula funding programs were not increasing as fast as the inflationary increases in construction, operating, and maintenance costs and the demand for new facilities. In fact, over the past decades while demand and costs were increasing, these state and federal funding programs experienced some absolute declines. Given this trend of reduced state and federal funding, the region, as reflected in subsequent Regional Transportation Plans, has utilized various and differing financing tools to implement regionally significant projects. However, other ongoing maintenance and operating needs have been neglected due to insufficient funds.

Local Funding

The TransNet Program has continued to provide for the accelerated implementation of major highway and transit projects, as identified in the TransNet Ordinance and Expenditure Plans, as well as numerous local street and road improvements and bicycle facilities and a new environmental mitigation banking program. In the initial TransNet program, approximately \$3 billion (including bond proceeds) has been disbursed to Caltrans, the two transit districts - Metropolitan Transit System (MTS [formerly the Metropolitan Transit Development Board]) and North County Transit District (NCTD) – the County of San Diego, and the 18 cities in the San Diego region to implement TransNet funded projects. Although the TransNet Extension approved by voters in 2004 did not become effective until April 2008, the SANDAG Board of Directors approved jump starting several key regional transportation projects. To date, SANDAG has issued bonds under the TransNet Extension in the amount of \$950 million to support the accelerated delivery

of major transit and highway projects across the region. The Early Action Program (EAP) consists of several major projects that are expected to make a significant impact on relieving traffic congestion. The EAP strategy is to leverage as much federal and state funds as available, then borrow against future TransNet revenues to complete these projects early in order to relieve congestion ahead of their initial schedules.

Although sales tax revenues are down, this has been more than offset by the fact that the region is currently benefiting from lower bid prices on construction contracts as shown in Figure 5. During the three year period from 2009 to 2011, the number of bidders on construction contracts has ranged between 7 and 11 bidders per job, compared to 3 to 4 bidders per job

during 2005-2007 when costs were at their highest. The higher number of bidders per job resulting from the slow economy has led to significantly lower bid prices on several key EAP project construction contracts. Figure 5 shows the cost index and revenue since 2005 and projected to 2020 indicating that SANDAG staff

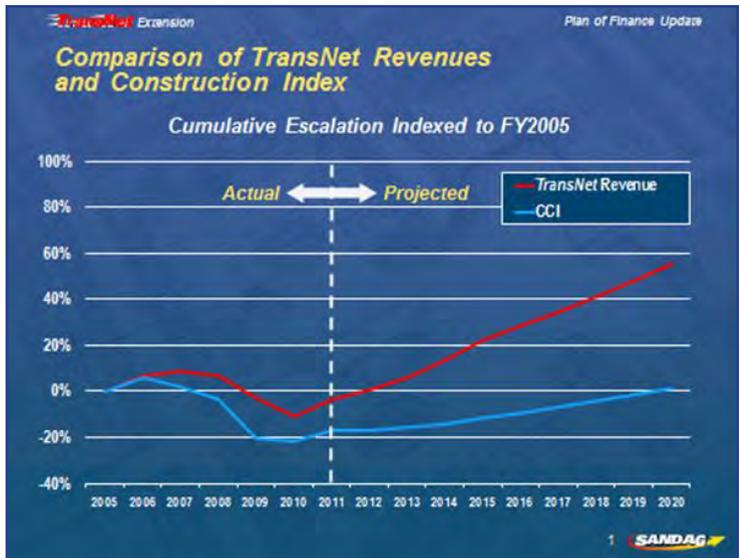


Figure 5

expects the cumulative rate of growth in sales tax revenue to outpace the increase in construction costs. This gap allows SANDAG to aggressively invest TransNet funds on EAP projects without jeopardizing the financial feasibility of the remaining projects in the TransNet program.

In the area of transit, SB 1703 transferred to SANDAG the responsibility for regional transit planning and major capital project development and implementation from the two transit development boards – NCTD and the MTS. MTS was evolved into a single operator similar to NCTD, incorporating the southern half of the county's separate transit systems that used to operate as separate entities. This MTS service merger continues the funding consolidation that was started under the MTDB in 2001. The new MTS provides for a more streamlined and seamless service within its service area. However the funding for transit maintenance and operations for both NCTD and MTS continues to be woefully lacking.

State Funding

A number of changes resulting from SB 45 were made to the state process under the State Transportation Improvement Program or the STIP that allowed a greater share of the STIP to be made available to regional agencies for allocation beginning with the 1998 STIP. Transportation funding ups and downs reflect those of the overall economy. The optimistic funding scenario of the 1998, 2000, and 2002 STIP cycles was quickly followed by a severely constrained 2004 STIP that estimated no new revenues for the near term. However, in 2006, voter passage of the landmark State of California infrastructure bond, Proposition 1B injected much needed revenues in the middle of the 2006 STIP providing some relief to transportation funding in the face of ever increasing need for improvements. Then, again with the 2008 and 2010 STIP, revenues were even more dramatically constrained as the state struggled to pass its annual budget in the face of dwindling revenues resulting from the effects of the Great Recession on the state and national economies.

The state budget continues to be under crisis. The California Transportation Commission (CTC) in its 2010 Annual Report noted that "...California's transportation program is operating under an atmosphere of extreme funding constraints caused by prolonged state budget negotiations and restricted bond sales..." Over \$7 billion statewide in various transportation accounts have been borrowed or diverted. The CTC repeatedly suspended allocations for projects programmed in the STIP, the State Highway Operation and Protection Program (SHOPP) and the TCRP.

While the state has now begun to re-pay some of these loans, the impact of these actions caused delays and associated cost increases in project delivery due to the repeated lack of funds. Repayment of the loans is now scheduled to be done over several years, extending well into the end of the current decade. To address this transportation budget crisis in 2006, the Governor and the Legislature agreed to support passage of SB 1266 (Prop. 1B), a general obligation infrastructure bond that would inject \$19.9 billion to various existing and new transportation programs. As discussed above, the voters approved this initiative in November 2006. The programs add money for various existing programs such as the STIP, the SHOPP, and Local Streets and Roads. New programs funded with other proceeds were dedicated for congestion relief (Corridor Mobility Improvement Account [CMIA]), port infrastructure, goods movement and security, transit safety, and other smaller programs.

The San Diego region has done well competing for Prop 1B funds and anticipates receiving approximately \$1.4 billion from this bond. Already, the CTC awarded \$367 million in CMIA funds for the I-15 Managed Lanes (South) project, \$6 million in Highway- Railroad Crossing Safety, and \$188 million in STIP funds sourced from the bonds for the SR 52 Extension project to Santee. Another \$82 million in CMIA was approved for the I-805 Carroll Canyon Road project. The availability of the federal stimulus funds (American Recovery and

Reinvestment Act [ARRA]) also augmented existing state funded projects (e.g., \$57 million in CMLA funds were freed up to use toward another project in the San Diego region). CTC issued a call for projects under the CMLA program using savings resulting from lower than expected bids from projects statewide. SANDAG received \$100 million for the I-805 HOV/Managed Lanes project. Also, the statewide Proposition 1A (high speed rail), approved by voters in 2008, would add \$950 million for rail projects statewide. Locally, approximately \$97 million were awarded to the San Diego area under Prop. 1A. However, due to the temporary suspension of the sales of bonds, limited funding has been allocated.

Despite these new programs, overall state transportation funding has declined in its share of transportation funding and state transportation funding is not expected to improve until the State budget crisis is solved.

Federal Funding

The passage of SAFETEA-LU in 2005 continued most of the federal funding programs that transportation agencies have come to rely on. One new subprogram of note is the Small Starts program under the Federal Transit Administration (FTA). A subset of New Starts, Small Starts projects are designed to fund transit capital projects costing up to \$250 million. SANDAG received an award for a Bus Rapid Transit (BRT) project under this program. Without a new transportation reauthorization, funding under SAFETEA-LU, which expired September 30, 2009 has been repeatedly extended for varying periods on a Continuing Resolution basis. The outlook for the federal transportation programs remains uncertain given the current federal budget deficit, declining and unsustainable balances in the Federal Highway Trust Fund, and other competing demands.

Locally, SANDAG continues to focus on encouraging the delivery of the projects programmed with federal funds while aggressively seeking additional discretionary funding for border infrastructure improvements, major transit projects, and other transportation improvements. SANDAG continues to work with regional, state and national partners toward reauthorization of SAFETEA-LU. SANDAG participates with other regional agencies, transportation providers, and organizations and associations statewide on the development of a set of principles for the reauthorization process. The effort to build support for the principles continues so that California can present a united position as federal legislation is developed. With the newly elected members of the legislature in 2010 and with the next presidential election in 2012, the timing of the reauthorization remains uncertain. However, the RTP assumes a continuation of the existing formula programs. Current congressional efforts appear to be focused on a two-year federal transportation bill, however the great challenge is the lack of a long-term transportation bill.

Similar to state funding, a return to the robust federal transportation funding would appear to be tied to solving the federal budget crisis.

The Future

The 2050 Regional Transportation Plan (Plan) provides a transportation network for another 1.25 million residents, 500,000 new jobs and 400,000 new homes while maintaining our quality of life, promoting sustainability and offering more mobility options. The Plan is based on the assumption that most of the new jobs and homes will be built in environmentally sustainable communities conducive to walking, bicycling and use of public transportation. The Plan includes new north-south and east-west light rail lines that provide convenient access to job centers; Sprinter Express service; significant expansion of the bus network; and new highway express lanes for carpools, high-tech buses and toll paying solo drivers. The Plan assumes a compact urban core where people are less dependent on the automobile.

The Plan is based on currently available and “reasonably expected” financial resources totaling \$213.8 billion in year of expenditure dollars. Local funds are projected to make up 55 percent of the total revenue, with state and federal funds providing 28 percent and 17 percent, respectively. The Plan is the vision that will be fine-tuned and implemented by the Regional Transportation Improvement Plan (RTIP) prepared every three years by SANDAG.

Summary of Grades

Highways

Highway pavement conditions are rated fair to good. This rating represents some deterioration since 2005 when the pavement condition was rated good. According to the 2010 Maintenance LOS report for District 11, only 52% of the travelway sampled required no corrective maintenance; 37% required a light level of corrective maintenance and 11% needed medium corrective maintenance in the coming year. As in 2005, landscape maintenance continues to need the most attention. The 2010 Maintenance LOS report found that only 19% of the landscape areas sampled needed no corrective maintenance, while 32% needed light corrective maintenance, 47% needed medium corrective maintenance, and 2% needed rehabilitation/reconstruction maintenance in the coming year. In terms of capacity, congestion peaked in 2005 and both hour of congestion and miles of congested freeway decreased until 2009, partly due to improvements in the infrastructure and partly due to the slowdown in the economy. Since 2009 both hours of congestion and miles of congested freeway have increased, but we are still below 2005 levels at the end of 2010. Clearly, additional investments will be needed as our economy recovers and population, employment and housing grow.

In terms of funding, in all areas – condition, capacity, maintenance/operations, and safety – there are great needs and very little money. The recently adopted 2050 RTP generally provides a long-term funding plan for highways, which depends on additional state, federal and local funds.

The Highways category was given an overall grade of D+. This grade would improve to a C with more certainty of state and federal funding. In addition, the 2050 RTP highway plan depends on a significant shift in the use of transit and other non-automobile modes of transportation. If the San Diego region is not able to obtain this large increase in non-automobile modes of transportation, additional funding may be necessary in the highway system.

Local Streets/Roads

Local streets and roads are judged to be in poor to fair condition, 45% to 50% require repairs. Capacity is generally good, but there are areas where congestion cripples major arterials that provide critical links to hospitals, employment centers, etc. and there is a large economic impact of this congestion. In terms of operations, many traffic signals are not interconnected for proper timing; different jurisdictions' systems often cannot "talk" to each other; and planned Intelligent Transportation Systems projects have yet to be implemented.

Funding is critically short for all aspects of local streets/roads. In terms of a long-term plan, local agencies have capital improvement programs for their jurisdictions, and SANDAG recently adopted the 2050 RTP, but there is still no comprehensive regional arterial plan and local agencies continue to eliminate, downsize, or defer construction of circulation element links.

The Local Streets/Roads category was given an overall grade of D. This grade would improve to a C with better funding and better coordination between jurisdictions.

Transit

Long Range Planning

The Transit Program defined in the 2050 RTP focuses on significantly expanding the role transit plays in meeting the region's mobility needs. Increased transit in the region is necessary to reduce green house gas emissions and build a sustainable environment.

The Transit Vision focuses on three strategies:

- Improved convenience and travel speeds for bus and rail service.
- Improved transit connections in key urban areas offering new service types to attract new riders.
- Enhanced customer experience with a transit system that is easier, safer and more enjoyable to use.

In order to meet these goals projects have been identified to upgrade existing facilities and implement new services in the most urbanized areas. Funding has been identified to complete approximately 70% of the needed facilities over the next 40 years. The "Revenue Constrained Network" defined in the 2050 RTP include the following:

- Improvements to the Existing Trolley System in downtown San Diego to increase the frequency of service and add limited stop commuter express service.
- Adding new Trolley and BRT lines to provide high-quality regional transit connection along high-demand corridors.
- Developing a system of high-speed Rapid Bus service in key arterial corridors to supplement local bus services.
- Double tracking the LOSSAN coastal rail corridor to enable more frequent and reliable service on the Coaster and Amtrak.
- Double tracking the Sprinter rail lines to increase the frequency of service and add limited-stop express services.
- Creating a system of high-frequency services on many of existing local bus routes in urban core areas.

Short Term Planning

In 2005, after voters approved the extension of the TransNet sales tax, the region established the Early Action Program to advance high priority improvement projects. Major transit projects planned for expedited completion include the following:

- NCTD Sprinter - (\$500 million) provides new light rail transit service between Escondido and Oceanside. Status: Constructed and in service since March 2008.
- Blue and Orange Line Trolley Corridor – (\$552 million) will provide 57 new low-floor vehicles, signal upgrades, fiber optic lines and remodeled stations for low-floor service. Status: Partially designed and constructed
- Mid-Coast Corridor Transit Project – (\$1.704 billion) will extend Blue Line Trolley from Santa Fe Depot to University Towne Centre and serve the campus of UCSD. Status: Preliminary engineering completed
- LOSSAN Double Tracking (\$330 million) will double track key segments of the LOSSAN corridor between Oceanside and San Diego for Coaster Service. Status: Final design in process and portions in construction
- I-15 Bus Rapid Transit Project – Construct transit centers at major interchanges along the I-15 corridor for access to freeway transit lanes. Status: Partially designed and constructed
- South Bay Bus Rapid Transit Project – Construct and operate a BRT service from Otay Mesa to downtown San Diego. Status: Environmental permitting complete
- Mid City Rapid Bus – (\$70 million) – Construct and operate Rapid Bus service from downtown San Diego to SDSU. Status: Design 95% Complete

Bus Service

Bus service in the region is provided by Metropolitan Transit System (MTS) and North County Transit District (NCTD). MTS provides service to the City of San Diego and southern San Diego County with a total 99 routes and nearly 700 vehicles. NCTD provides service to north San Diego County covering 31 routes with a fleet of 145 buses.

A total of 55 million passengers are served annually by the regional bus system which includes rapid bus, express, local, and rural routes. The Early Action Program has provided funding for several major bus service expansions including the I-15 BRT, Super Loop and Mid-City Rapid. Recent grants have allowed for purchase of new vehicles. Greater than 50% of the fleets are less than 10 years old. Safety and maintenance of the vehicles is a top priority. Both MTS and NCTD have outstanding safety records. Meeting the long term demands of the region will require significant additional improvements to the systems particularly expansion and addition of the BRT, Rapid Bus and Express Routes. Replacement of the older vehicles in the fleet is also critical to the level of service and reliability of the operation. The FTA New Starts program has included long term maintenance funding for some of the BRT projects, but funding from state and federal agencies is still uncertain due to the current economic conditions. While significant short term improvements have been possible due to funding from the Early Action Program, the long term needs and lack of funding have lowered the overall grade for bus service to a C-.



Light Rail Service

Light rail service in the region is provided by MTS in the southerly portion of the County and by NCTD in north County. MTS operates a total of three lines connecting downtown San Diego to south County via the Blue Line, Central San Diego via the Green Line and east County via the Orange Line. The system includes 51 miles of track and a fleet of 134 rail cars. The San Diego Trolley serves approximately 99,000 passengers daily. Like the regional bus systems, safety is a top priority and the trolley has an extensive safety plan in place and outstanding safety record. In the short term, the Early Action Plan has provided funding for much needed rehabilitation and the next phase of expansion. System and track improvements are under construction on the Blue Line. Station Improvements for change to Low Floor Cars are under construction on the Blue Line and Orange Line. The Mid-Coast line serving University Town Center and the University of California at San Diego is currently in the design phase. RTP 2050 provides a comprehensive plan to address future needs including addition of trolley and street car lines. While recent improvements

have been made and plans are in place to address future needs, the lack of funding and uncertainty of funding have lowered the grade for the light rail system to a C-.

Commuter Rail

Two commuter rail lines are operated by NCTD. The Coaster Line connects Oceanside to downtown San Diego. The line covers a total of 60 miles of the LOSSAN corridor with a fleet of 7 locomotives and 28 coaches. Only 50% of the corridor is double tracked and many of the bridges are wooden trestle with ages up to 75 years. This is one of the busiest corridors in the nation with service shared by AMTRAK and BNSF freight. Service is at capacity without additional double tracking. The recently completed Sprinter line provides service between Oceanside and Escondido. The line covers 22 miles with a fleet of 12 vehicles. The line was completely rebuilt as part of a federally funded New Starts Rail Project. Less than 50% is double tracked. Both the Coaster and Sprinter routes have comprehensive emergency programs in place. Safety is always first and any incident within a single track area will shut down the system and interrupt service. Weekday ridership of the Coaster and Sprinter averages approximately 13,000 passengers. The 2050 RTP provides a comprehensive plan and probable funding sources for double tracking of both lines, bridge replacement on the LOSSAN Corridor and expansion of service to meet future demand. Replacement of Coaster vehicles and rehabilitation of existing older track will be needed and funding has not been identified. Some improvements are underway on the Coaster line to replace older bridges and provide double track as part of the Early Action Plan, the overall corridor needs are significant due to the age of the infrastructure and the constraints of the existing right of way particularly crossing the coastal lagoons. The level of need and the uncertainty of funding



San Diego Trolley



NCTD Sprinter



NCTD Coaster

drop the overall grade for the Coaster to a D. The Sprinter line is new and infrastructure and rolling stock are highly rated for the short term. The need to double track the line to meet future demand and reliability together with the uncertainty of funding, lower the grade to a B. The average grade of the Commuter Rail systems in the region is a C.

Summary

The overall grade for San Diego's surface transportation is D+. Traffic congestion in the region has decreased since 2005 as a result of poor economic conditions and completion of key improvements to our highway system; however in the last year traffic congestion is increasing as the economy begins to recover. The highway and transit systems are well planned as outlined in SANDAG's RTP 2050 to meet the future needs of the region over the next 40 years. Expansion of the transit system including light rail, commuter rail and rapid bus service is a key component of meeting future transportation demands and maintaining San Diego's quality of life. The TransNet program will provide consistent local funding; however the planned improvements are based on a 45% contribution from state and federal sources. Based on the current economic conditions, future state and federal funding sources are in jeopardy. Local roadways are not well maintained, the condition of our highways is starting to deteriorate and transit service has been cut due to lack of funding. Reliable funding sources for highway and transit facilities are needed to meet future demand and new sources of local funding are needed to operate, maintain and repair our road, highway and transit system.

What You Can Do

Based on the information gathered during the preparation of this report card, ASCE makes the following recommendations related to transportation infrastructure:

- Support critical funding legislation, including:
 - Urge congressional leaders to pass a new transportation bill to replace the expired SAFETEA-LU bill.
 - Over time and with an improving economy, support legislation for new stable sources of state and federal transportation funding that will keep pace with inflation and replace dwindling state and federal gas taxes.
 - Support the establishment of a long-term, reliable local funding source for transportation infrastructure maintenance and transit subsidies, similar to the current TransNet program.
- Support implementation of the 2050 Regional Transportation Plan, as funding becomes available. This plan addresses the region's needs for highways, local streets/roads, and transit.
- Encourage SANDAG and local agencies to continue developing regional strategies and

plans for the local street system, in order to achieve the goals of expanding the street network capacity, closing gaps in the network, increasing operational efficiency, and improving pavement conditions.

Sources

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- Final 2008 Congestion Management Program Update, SANDAG, November 2008
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- San Diego Region Surface Transportation Infrastructure Report Card, Clark Fernon, ASCE, October 2004
- State of the Commute 2010, SANDAG
- Street Maintenance: City Needs to Improve Planning, Coordination, and Oversight to Effectively Manage Transportation Assets, Office of the City Auditor, City of San Diego, November 2010
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- Several individual agency surveys

	2005	2012
Wastewater/Collection System	C+	B

The safe and reliable collection of wastewater is an essential element of our ongoing commitment to protect public health and the environment. Several agencies and cities in the incorporated and unincorporated areas of the San Diego region operate and maintain more than 7,000 miles of sewer pipeline and hundreds of pump stations.

Nationally, wastewater systems are generally in poor condition for several reasons, including aging infrastructure, population increases and shifts, insufficient treatment capacity, and funding challenges. Regulatory requirements are also becoming more stringent, requiring facility upgrades and additional monitoring and reporting.



One of many sewer lift stations

Background

Since 2005, all operators of California collection systems implemented controls that improve the operations and management of the systems. On May 2, 2006, the State Water Resources Control Board (SWRCB) adopted Order Number 2006-0003-DWQ, the Waste Discharge Requirements (WDRs), which required all federal and state agencies, municipalities, counties, districts, and other public entities that own or operate a wastewater collection system greater than one mile in length to develop and implement a system-specific Sewer System Management Plan (SSMP). All SSMP's were in place by 2010.

In California, the WDR and corresponding SSMP's represent an unprecedented and over-arching regulation that requires wastewater agencies to institute programs to ensure the proper operation, replacement, and funding of collection systems. Key elements of the SSMP that are directly applicable to the ASCE Infrastructure Report Card effort include:

- Operation and Maintenance Program
- Design and Performance Provisions
- System Evaluation & Capacity Assurance Plan
- Monitoring, Measurement, and Program Modifications
- Bi-Annual Program Audits

These requirements correlate well with maintaining collection system infrastructure in good condition, and the committee believes that the SSMPs were the driving force behind the improvement in the San Diego County collection system grade from C+ in 2005 to "B" in 2012.

Another reason for the Wastewater/Collection System grade improvement is a result of the City of San Diego complying with its Final Consent Decree. The city's collection system has dramatically decreased

the total number of sewer spills, from 365 in calendar 2000 to 38 in 2009. No regulatory penalty has been incurred as a result of the spills. The city had been sued by the EPA and Baykeeper, but negotiated two partial consent decrees which expired on June 30, 2006 and June 30, 2007. In 2007, the city negotiated the Final Consent Decree which requires the city to invest in additional capital improvements and enhance operations. Compliance with this Final Consent Decree between 2010 and 2014 is estimated to cost \$99 million for capital improvement projects and \$42 million for operations and maintenance expense, all of which have been included in the city's operating projections."

Within San Diego County, 47 agencies own, operate, and maintain more than 7,000 miles of collection system pipes and associated pump stations and force mains. The wastewater committee submitted surveys to all agencies and received responses representing 23 agencies with an aggregate total of more than 6,200 miles of pipelines and 206 pump stations, which represents almost 90% of the system in the region. The respondents had a combined average of 91 sanitary sewer overflows (SSO's) per year for the past five years. This averages to about 1.5 SSO's per 100 miles of pipe, well below the industry average of two SSO's per 100 miles for a well performing agency.

Infrastructure Survey Assessment

Each respondent provided information on the following categories for its specific collection system:

- Condition
- Capacity
- Operations
- Funding needs



Typical wastewater collection pipeline under construction

Because the length of each respondent's collection system varies from system to system, the committee decided that responses for the larger systems should have a greater impact on the overall score because the response affects more infrastructure than the other, smaller systems. Therefore, each response is weighted by the ratio of the respondent's length over the total length for the agencies who responded to this survey. We then developed a numerical grade for each category and converted each to a letter grade. The scores for each category and the average overall score is shown in the table below.

Category	Numerical Grade	Letter Grade
Condition	0.78	C+
Capacity	0.84	B
Operations	0.87	B+
Funding Needs	0.83	B
Overall Average	0.83	B

Since this is an average grade for the entire wastewater collection system infrastructure in the San Diego region, some systems are better maintained, while others require work to make them adequate. Trends for each category are summarized below.

Condition. Based on the respondents' answers, the structural condition of the collection system could be improved but generally many agencies consider their pipes as good or fair. Most agencies are planning and performing capital improvements to correct known structural deficiencies in their systems.

Capacity. Respondents said that their pipes and pump stations have good capacity. This indicates that the collection systems can generally accommodate all dry weather flows and probably most wet weather flows.

Operations. Respondents rated the operations and maintenance of their collection systems as excellent to good. Generally, there is adequate staff to complete the tasks, and all agencies have improved their cleaning protocols, acquired the necessary tools, and have mapped their systems to accurately reflect the location of their pipes.

Long-Term Plan and Funding. Most agencies have some form of a long-term plan. Some agencies indicated that they need to update their plan. Also, funding to improve collection systems was ranked as good.

Public Policy Considerations

Nearly all agencies are regularly inspecting their collection systems and identifying necessary improvements. The goal is to renew the life of the aging infrastructure by

repairing and rehabilitating assets before they fail or cause a sewer overflow. Two key elements in a well maintained collection system include adequate funding and effective operational procedures.

Funding: Funding to operate, maintain, and construct the facilities needed to collect and convey the approximately 220 million gallons of wastewater generated every day in the San Diego region comes primarily from user fees. All of these agencies have well-established and sufficient authority to enact and collect user fees. It is, therefore, required and expected that the decision-makers who oversee these agencies adopt fees that are sufficient to meet their foreseeable operating and capital needs.

For agencies that use wastewater flow volume to develop customer fees, recent reductions in flows are shrinking their revenues. The recession that started in 2008 caused users to curb water use; flows to the wastewater system fell proportionally. Also associated with the recession, new development plummeted significantly, causing revenues for new connection fees to dry up. Additionally, drought conditions in California caused customers to conserve water and thus water use and waste discharge also reduced. Finally, low flow fixtures for faucets and toilets further reduced flows into the wastewater systems. With lower flows, the agencies that derive revenues from flow volume are experiencing lower revenues. Consequently, certain wastewater agencies are developing plans to account for the projected budget shortfalls for operational and planned capital improvements.

Operations and Maintenance: Even with reduced flows, the wastewater must be continuously pumped to the treatment plants. On September 9, 2011 a critical power failure caused a county-wide power blackout for nearly 12 hours. Agencies relying on power feeds from multiple grids lost all power and needed to connect temporary gas driven generators to avert backups and overflows at pump stations. This event has caused many agencies to review and update their back-up power alternatives and operational procedures related to power outages.

Each agency and city has developed its own plan to address its own needs. Most agencies are adjusting their per capita use flows to reflect reductions in flow volume and estimating whether this is a permanent trend or a temporary trend. The resulting answers affect how an agency will plan for capacity needs and system expansion. The wastewater collection system working committee recommends that agencies and cities:



Cast-in-place manhole base

- Continue to implement and update their SSMPs;
- Develop systematic efforts to use the data from routine inspection and assessment programs to identify capital projects and operational needs;
- Identify and secure sufficient revenues dedicated to wastewater collection systems; and
- Support initiatives to develop funding sources from local, state and federal levels for improvements to the wastewater infrastructure systems.

What You Can Do

Public involvement is an important ingredient in a well-run wastewater management system. Use the websites operated by these agencies to find announcements and agenda listings. Many agencies provide a free subscription service that sends updates and agendas automatically to your inbox. When important projects and budget matters are under consideration by the decision-makers, your voice in front of the body or conveyed through written comments is a powerful and meaningful part of the public policy making process.

Do not dispose of fats, oils, and greases (FOG) in your sink. Instead, place them in a container and place that in a trash can. FOG coalesces to form clogs in your service lateral and in the public sewers of your community. FOG is a significant cause of sewage blockages and overflows in the San Diego region.



Sewage wet well construction

Sources

- Several individual agency surveys

2005

2012

Wastewater Treatment

B

B+

Thoughtfully planned, well operated, and intelligently maintained wastewater treatment plants (WWTP) and water recycling facilities (WRF) help sustain the unique and high quality of life San Diegans expect and enjoy. Infrastructure investments, management system improvements, an expanding base of technical expertise, and rigorous regulatory oversight have improved the operational effectiveness of these facilities since our last report card. Evidence of these improvements is reflected in a significant drop in the number of ocean discharge permit violations, sewer spills, and beach closures; the volume of recycled water produced; and an increase in the deployment of technology to recover energy and other resources embedded in wastewater.

While water is an apparently abundant and naturally renewable resource, only 1% of all water on earth is accessible for human use. Drinking water is sourced from lakes, rivers, reservoirs, and underground aquifers which are often subject to recurring stressors caused by human activity and natural processes. In addition, the Pacific Ocean is a unique and abundant recreational and commercial resource used by thousands of San Diegans each day. Pollution and over-reliance on the one-time use of limited potable water supplies unnecessarily diminish these two life sustaining resources, and, threaten the health and economic vitality of our community. WWTPs prevent pollution by intercepting chemicals and other pollutants before they can damage a drinking water source or foul the Pacific Ocean. WRFs purify already used water for a growing array of commercial and public applications. Thus, WWTPs and WRFs play a critical role in protecting the Pacific Ocean and maximizing the efficacy our strained water supply portfolio.

Wastewater Treatment Plants. Wastewater treatment operations in San Diego County are dominated by multi-agency partnerships known in government parlance as joint powers agencies or JPAs. Excepting two cities and the United States Marine Corps Base Camp Pendleton, the remainder and vast majority of wastewater treatment services in the county are provided through JPAs. JPAs can provide economies of scale that cities and special district often cannot achieve on their own. JPA governing officials also tend to leverage these economies in a manner that allows the utility to take a long-term approach to project planning



Encina Wastewater Authority's new Heat Dryer produced 6,000 tons of biofuel for the cement industry in 2010.

and execution which, in turn, encourages public and private investment in wastewater treatment infrastructure. San Diego WWTPs treat and dispose of over 231 million gallons per day (MGD) and possess the capacity to handle an additional 135 MGD.

Water Recycling Facilities. WRFs in San Diego County are operated by cities, municipal water and utility districts, as well as JPAs. WRFs have historically trended towards the production of water for agency-specific local needs. More recently, agencies throughout the county have initiated efforts to enhance regional cooperation and long-range planning. WRFs in San Diego treat and recycle 40 MGD, an amount equal to approximately 124 acre-feet (AF) of water each day.



Recycled water ready for distribution

Since an AF of water is enough to meet a family of four's household potable water demand for a year, San Diego WRFs produce enough water each year to supply over 45,000 households – or roughly 6% of the county's population. However, a significant volume of the recycled water produced in San Diego is not used to supplant potable water and county WRFs possess over twenty-three (23) MGD in unused capacity.

Evaluation

In developing this report card, surveys were received from 13 public agencies that operate over 40 WWTPs and WRFs. These public agencies serve nearly 97% of the county's population. The grades for San Diego WWTPs and WRFs are summarized in the following tables.

Grading Category	WWTP		WRFs	
Existing Adequacy – Capacity	3	Good	3	Good
Existing Adequacy – Condition	3	Good	3	Good
Existing Adequacy – O&M	3	Good	3	Good
Existing Adequacy – Public Safety	3	Good	3	Good
Existing Adequacy – Funding	3	Good	3	Good
Existing Adequacy Score	15		15	

Grading Category	WWTP		WRFs	
Future Adequacy – Capacity	3	Good	3	Good
Future Adequacy – Condition	3	Good	3	Good
Future Adequacy – O&M	3	Good	3	Good
Future Adequacy – Public Safety	1	Fair	3	Good
Future Adequacy – Funding	0	Poor	1	Fair
Future Adequacy Score	10		13	
Sub-Category Grades	25	B	28	A
Overall Grade	53		B+	

San Diego County wastewater and water recycling facility infrastructure grades

Wastewater Treatment Plants. The grade for WWTPs is a B. Respondents consistently reported a high degree of confidence in: the capacity of their facilities to meet the public's need both now and in the future; and, in the effectiveness of their operations and maintenance programs. These high marks are very likely attributable to recent infrastructure investment and more rigorous technical certification for the operators, mechanic, and chemists who staff WWTPs across the county. Confidence was also expressed in the responses to questions about current asset condition; and, public safety as assessed by the reliability and redundancy of their facilities and systems, and, compliance with applicable local, state and federal regulations. However, respondents expressed concern that emerging receiving water nutrient and bacteria standards, as well as more stringent green house gas regulations, may threaten WWTPs ability to meet regulatory requirements in the future. While all the respondents reported having some form of long-term comprehensive asset management program to ensure assets are repaired or replaced in accordance to established criteria, they expressed less confidence in their ability to appropriately fund future operating and capital improvement programs as planned. These concerns are primarily driven by the major shifts in federal and state policy related to the funding of local government efforts to comply with the Clean Water Act and other regulatory mandates.

Water Reclamation Facilities. The grade for WRFs is an A. The survey responses show high confidence in: the capacity of their facilities to meet the public's current and future needs; current asset condition; the effectiveness of their operations and maintenance programs; and, public safety expressed as their ability to comply with applicable state and federal regulations. The high marks appear to reflect a recent surge in WRF capacity expansions, the relatively young age of the WRF infrastructure, more rigorous technical certification for staff and the deployment of locally appropriate water recycling technologies. Confidence was also expressed in the responses to public safety questions related to the reliability and redundancy of WRF processes and systems. Once

again, while all the responding agencies reported having a long-term comprehensive asset management program to ensure assets are repaired or replaced in accordance to established criteria, concerns related to funding are difficult to escape.

Public Policy Considerations

Water is necessary to sustain human life. With an average annual rainfall of less than of 12 inches, San Diego is classified as a semi-arid climate. According to the San Diego County Water Authority, “up to 80 percent of the region’s water is imported from the Colorado River and Northern California.” Therefore, it is imperative to continue to strive towards strategic integration of public policy related to water resource management. Cookie-cutter, one-size-fits-all solutions mandated in Washington D.C. or Sacramento thwarts the creativity and flexibility necessary to plan and execute locally appropriate watershed management solutions in a cost-effective manner.

Infrastructure Funding. In its 2009 America’s Infrastructure Report Card, ASCE reported:

“The EPA Gap Analysis estimated that ... there will be a roughly \$6-billion gap between current annual capital expenditures for wastewater treatment and projected spending needs. The study also estimated that if wastewater spending increases by only 3% per year, the gap would shrink by nearly 90% (to about \$1 billion annually). The CBO released its own gap analysis in 2002, in which it determined that the gap for wastewater ranges from \$23 billion to \$37 billion annually.”

While there is debate about the size of the investment gap, ignoring that this gap exists endangers the enormous public health and environmental improvements made since the adoption of the Clean Water Act. Combine this “gap” with the apparent long-term curtailment of federal and state grant funding opportunities and the bleak funding picture painted by wastewater managers in their survey responses becomes quite understandable.

Water-Energy Nexus. Many citizens are aware that almost 20% of all the electricity consumed in California is used to pump, treat and dispose of water. Thus, it should come as no surprise that this report would encourage continuing the on-going drive towards energy efficiency across the entire water sector. What is less understood by both citizens and water industry practitioners is the amount of energy embedded in the wastewater entering WWTPs. Only a decade ago, the theory



Renewable energy production at a San Diego WWTP

that there was sufficient energy within a given wastewater stream to operate the WWTP was in debate. Today, researchers believe that there is 10 to 20 times the energy required to operate the WWTP contained in its influent wastewater. The three largest WWTPs in the county use the methane by-product of the wastewater treatment process to produce much of their on-site electrical demands. Considering the importance of energy to the economy and national security, public policies ought to encourage the development of these renewable energy sources.

Watershed Management. Traditional Clean Water Act enforcement theories have focused on preventing or controlling the emission of polluted wastewater from specific “point sources” within an established political jurisdiction and ensuring any emissions from those point sources meet national standards. This approach has resulted in a complicated and conflicted regulatory framework that often fails to appropriately value the expense of compliance until after the regulations are in place. Political boundaries are irrelevant to water and water polluting substances. Watershed boundaries, however, unconditionally restrain all surface waters and how water from that watershed enters aquifers. In San Diego county, watershed boundaries also dictate where and what surface waters reach the Pacific Ocean. A regulatory framework that effectively integrates watershed specific characteristics with state and national water quality goals would allow for more creative and less costly solutions to water quality challenges.

What You Can Do

Public involvement is an indispensable resource for well-managed wastewater and water recycling enterprises. The internet makes research efficient and provides easy pathways for the public to learn about local, regional, national and international water management initiatives and developments. The internet also makes it simple to communicate with elected officials at all levels of government. The ASCE encourages readers to become and stay involved in our efforts to improve the quality of water. Here are three important issues that provide a place to start for citizens who want to do more:

First, money matters. Encourage local, state, and federal officials to: [a] give local wastewater managers the flexibility to meet outcome targets using solutions that make environmental and economic sense for your community; [b] stimulate locally appropriate public and private investment in WWTP and WRF infrastructure; and, [c] to adopt service rates sufficient to timely implement established long-term asset management plans.

Second, efficient use of renewable energy helps build a more sustainable community. Encourage local, state and federal officials to support public and private investment to: [a] advance on-going water sector energy efficiency initiatives; and, [b] recover latent wastewater energy resources for use on-site and for distribution via the electric grid and natural gas pipeline system.

Third, watershed based regulations and environmental management systems can produce excellent outcomes specifically tailored for local conditions and financing capabilities. Encourage local, state and federal officials to support the continued transition to watershed based water quality regulation and management.

Sources

- The World's Water 2008-2009: The Biennial Report of Freshwater Resources Pacific Institute)"
- U.S. Census 2010
- Heal the Bay Beach Report Card 2004-2010
- ASCE 2009 National Infrastructure Report Card
- Several individual agency surveys

	2005	2012
Water	B	B

The San Diego area is an arid region with a large population that relies on imported water to meet a majority of its supply demands. In the past, the agencies responsible for providing water have had access to a dependable supply of drinking water to meet the needs of a constantly growing population. This growth, as well as intermittent droughts and other factors, threaten this dependability. In 2011, San Diego County received most of its imported water from outside the county delivered through the Metropolitan Water District of Southern California's (MWD) infrastructure. Approximately 20% is from northern California through the State Water Project, and approximately 50% from the Colorado River. Both water sources have their own set of challenges which are constantly being managed. Approximately 30% is provided by local water supplies including conservation. The San Diego County Water Authority (SDCWA) is the region's water 'wholesaler' and is responsible for securing imported water and conveying raw and treated water to its 24 member agencies. Some member agencies rely entirely on imported water, while others have alternative sources such as local surface water, groundwater, recycled water, and desalination. The SDCWA and its member agencies treat and distribute the water to residential, industrial, agriculture, and commercial customers through 8,000 miles of pipeline.

Background

The overall Report Card grade for water supply is a B. There is much to be positive about in the outlook for water in the San Diego region. The SDCWA has secured new imported water supplies through a long-term (45-75 years) water conservation and transfer agreement with the Imperial Irrigation District. The deal, reached in 2003, provided 70,000 acre-feet of highly reliable Colorado River water in 2010 and increases to 200,000 acre-feet annually in 2021. The SDCWA also has a separate, 110-year agreement to receive Colorado River water conserved by lining parts of the Coachella and All-American canals. These projects provide 80,000 acre-feet of water to the region.

In recent years, a conservation ethic has been established that many believe is permanent. While the benefits of conserving water in an arid location are obvious, one that is often overlooked is that existing pipelines previously identified for replacement due to capacity limitations may now be able to accommodate lowered demand projections. Another accomplishment in the last few years is the upgrade and expansion of the region's capability to treat water. One new treatment plant was added to the inventory and many existing plants underwent capacity and process performance enhancements using state-of-the-art processes. A third improvement is that many of the agencies are going to more formalized and thorough methods of asset management and condition assessment.

This also extends the service life of water assets as well as assists in assuring that improvements are made when they are necessary.

There is, however, much to be concerned about. Water rates have been steadily increasing and are likely to do so at least in the near future. In the current economy, the ratepayer has become a lot more cognizant of how much they are paying for water and are often pushing back at public hearings where rate increases are being considered. The budgets of water agencies will be a significant challenge in the years to come. In respect to infrastructure, the chief concern is the replacement and rehabilitation of distribution systems. Many agencies are still challenged with replacing cast iron water mains which have been found to be the primary reason for the failures of piping systems. Replacing these types of pipelines has proven to be a costly need. The last concern that needs to be emphasized is the challenge of water supply in the region. While the region is increasing its ability to store water locally, it is highly dependent on water from either the Colorado River or northern California both of which face ongoing challenges.

Evaluation

The water supply report card assessed the adequacy of existing infrastructure to meet near term (1-5 years), and future demands (6-20 years). Four infrastructure categories were surveyed: Potable Treatment Plant; Potable Water Supply Systems; Potable Distribution System; and, Recycled Distribution System. The categories were evaluated for Capacity; Condition; Operations & Maintenance; Regulatory/Public Safety; and, Funding.

The following tables summarize the individual infrastructure category grades for existing and future adequacy.

Existing Adequacy (1-5 Years)	Grade
Potable Water Treatment Plant	B
Potable Water Supply System	B
Potable Water Distribution System	B
Recycled Water Distribution System	B

Future Adequacy (6-20 Years)	Grade
Potable Water Treatment Plant	B
Potable Water Supply System	B
Potable Water Distribution System	B
Recycled Water Distribution System	B

As shown in these tables, the overall (combined existing and future) grade for each individual category is a B.

Additionally, the water agencies were asked to identify their priority issues/concerns facing their districts. The top three issues/concerns identified were:

1. Water Rates
2. Infrastructure Replacement & Rehabilitation
3. Future Water Supply

Public Policy Considerations

Water supply sustainability for San Diego County must continue to focus on several aspects of water infrastructure to maintain service reliability and meet the region's supply needs. The following is a summary of the major issues facing the region that policy makers must consider.

Infrastructure

While the County's water infrastructure received an overall grade of B, it will require continuing investments for repair and replacement to ensure its reliability and sustainability. In large part agencies have asset management programs and master plans that identify future infrastructure replacement and improvements projects, however obtaining the necessary funding has been challenging especially during the current economy and the impacts of rapidly increasing water rates. It should be noted that while infrastructure within San Diego is being managed; deferred maintenance of the State aqueduct, supplying water to our region, has become a significant concern.

Water Supply

In respect to water supply, the SDCWA and its 24 member agencies have aggressively diversified the region's water supply portfolio by developing new local and imported water supplies. This strategy already is enhancing regional supply reliability. In 2011, the San Diego region had reduced its reliance on MWD supplies from 95% in 1991 to approximately 50% in 2011. This has lessened the impact of current water cutbacks from MWD that began in July 2009. To provide sustainable solutions that meet the region's future supply requirements, agencies are developing water recycling, groundwater, and ocean desalination facilities that when completed will meet a significant percentage of the region's water demand.

The region has also been focusing on increasing the capacity of carryover storage (the amount of water supply that can be carried from one year to the next), a key element of this effort is the raising of San Vicente Dam which will more than double the capacity of that reservoir. San Vicente is also part of the Emergency Storage Program which will

provide the region's population with six months of emergency water supply should an event happen that would cut us off from our traditional sources.

The Colorado River provides approximately 50% of the region's water supply through MWD including water transfers between the SDCWA and the Imperial Irrigation District. In the future, San Diego will have to remain vigilant as environmental issues, climate change, and competition threaten long-term reliability.

Supplies from the State Water Project which provides approximately 20% of the region's water supply from the Sacramento-San Joaquin River Delta (Delta) face more uncertainty. The Delta system challenges include insufficient upstream storage, inadequate conveyance, wastewater discharges into the system, vulnerable Delta levees, endangered species, invasive species, institutional complexity, regulatory and unfavorable legal decisions. The Delta's ecosystem is not sustainable in its current form. A time horizon of 15-20 years will be needed to implement the "Delta fix" once one is agreed upon.



Olivenhain Dam & Reservoir

Finally, efforts in respect to developing Indirect Potable Reuse are maturing to the point where it could be a significant part of the region's water supply in the future.

Another important piece of water supply involves efforts relating to water conservation, in which a new 'ethic' of water use seems to be in place. While not new water per se, it adds to our water supply as a 'gallon saved is a gallon earned'.

Water Quality

The region's water quality prior to treatment is largely dependent on its source. Source water from both the Colorado River and the State Water Project can have various components and/or contaminants that require different treatment approaches. Within the San Diego region, water supply sources can be impacted due to urbanization in various watersheds as well as other factors such as agriculture, recreational uses, wildlife, and fires.

Typically water quality has been considered good to excellent, but will vary depending on imported water inflows and surface water contamination. Source water protection is considered a key element in regional water quality and the region works together on many fronts to measure water quality as well as increase watershed awareness and management. Currently, the most significant water quality issue that is noticed by the public is algae blooms, which can lead to taste and odor problems. A new issue, that presents new maintenance challenges along with potential water quality issues, is the

presence of quagga mussels, an invasive species that is causing problems in many regions of the United States. To date the region's efforts to combat these mussels have been successful and they have not impacted the region significantly.

The monitoring of source waters is critical in helping to identify those constituents that should be controlled at the source and to determine the best ways to operate the water system so as to improve the quality of water delivered to the consumer. The effect of urban runoff on receiving water quality is a recognized problem.

To address the issues associated with surface water quality, agencies in the region worked together to develop an Integrated Regional Water Management Plan (IRWM) for the San Diego region. An important element in the IRWM is to protect and enhance the region's local surface water quality. As part of this process, projects are identified and implemented to assist in watershed protection, and thereby, protect the quality of surface water supplies.

Conservation

Water conservation can be considered the least expensive new source of water. In the previous 15 years the focus has been primarily on indoor conservation and raising the public's awareness that the region needs to conserve. While indoor conservation will need to be continued and enhanced, the focus is now shifting to outdoor conservation. The California Water Conservation Act of 2009 requires agencies to reduce their per capita water usage by 20% by 2020. To meet this goal, region-wide programs are being established for outdoor landscaping conservation which is, in large part, behavior driven. Both residential as well as commercial properties are being encouraged to use drought tolerant landscaping and smart irrigation controllers. The SDCWA has set a goal to meet 10% of the region's water supply through conservation by 2020.

Water Rates

Water rates in San Diego County have been increasing. The reasons for this are two-fold. First of all, the cost of purchasing imported water from MWD has increased due to the reduction in allocation of low-cost Colorado River water resulting in more reliance on higher cost water from the State Water Project. At the same time, the allocation of State Water Project water has been reduced to mitigate environmental concerns in the Bay Delta. Secondly, the recent drought and regulatory restrictions in the Bay-Delta have drastically reduced water deliveries from the State Water Project and the Colorado River increasing unit cost of water to fund fixed infrastructure costs. It is expected that water rates will continue to rise to support infrastructure, new water supplies, and decreasing water sales due to conservation.

Energy

In the western United States, there is a close connection between water and power resources. Water utilities use large amounts of energy to treat and deliver water. In the future policy makers will have to consider the energy implications of their decisions and integrate energy use into water planning to save money, reduce waste, protect the environment and strengthen the economy.

Climate Change

A new and not fully understood challenge is climate change. Growing awareness of natural and human causes of climate change is improving our understanding of the potential impacts on water supply – but large uncertainty remains. In the past, California's drought cycles have lasted decades; therefore, climate change must be part of future water planning decisions.

Funding

The condition of water treatment and distribution facilities varies among the water agencies. In general, the condition and hydraulic capacity of these facilities are considered "Good." It is important that water agencies continue to adequately fund the maintenance of existing facilities and equipment. Most agencies have a master plan that outlines future improvements and identifies funding needs. These master plans, both for treatment plants and distribution systems, should be kept up-to-date, and capital reserves should be established as needed for future improvements. The challenge water agencies face currently and in the future are managing water rates while balancing capital project funding needs against rapidly rising cost of water supplies, regulatory requirements, and economic cycles.



Pipeline relining

What You Can Do

As a region, we have been successful in water conservation. Urban and agriculture water users have reduced their combined consumption by 23%. However, likely population growth, more demands on our external water supplies, and new state law will require us to increase conservation even more. Citizens can also keep up on all of the policy discussions that decision makers are having and participate. In the near future decisions will be made regarding water reclamation, desalination, water rates, and infrastructure replacement; all of which will have an impact on all of us. Much can be learned just by reviewing the

agendas of city councils and boards or visiting the websites of your local water agency or water department. San Diego has an arid climate, and water issues will always play an important role in the development of public policy that dictate the future of the region.

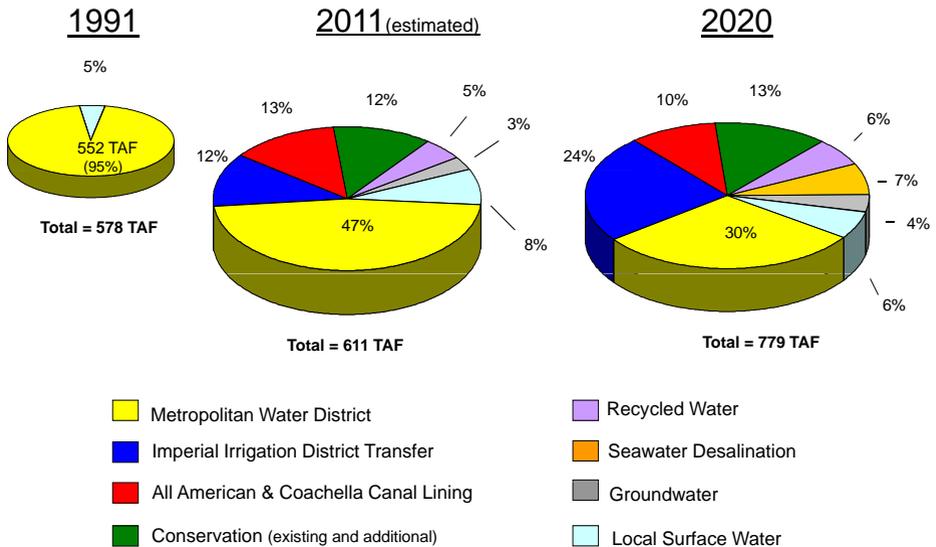
Other actions you can take:

- Support an effective agreement on a long-term management fix of the Bay-Delta region.
- Support regional water supply diversification goals including recycled water, groundwater desalination, and ocean water desalination.
- Support regional water storage projects for emergency and local water supply capture.
- Maintain high-quality water supply by supporting Integrated Regional Water Management Plans.
- Support water use efficiency to meet conservation goals.
- Support implementation of infrastructure improvements to ensure reliability and sustainability of water supply for the public and the regional economy.

Sources

- Several individual agency surveys

Increasing San Diego County's Water Supply Reliability through Supply Diversification



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ASCE
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ASCE San Diego Section
P.O. Box 1028
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