The State of Orange County's Infrastructure 2010

A Citizen's Guide

A Message from ASCE

"Continued investment in Orange County's infrastructure is the key in sustaining its economic engine and maintaining our quality of life."

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Message from UCI Civil and Environmental Engineering Affiliates

Dear Friends and Colleagues:

Orange County's infrastructure is one of the most important components contributing to our healthy communities and quality of life. Our infrastructure is aging, and as the backbone of our local civilization, it continuously must bear the burden of our population's use and increasing needs. Orange County, like our nation, is racing against time to keep up with the need for infrastructure. Concurrently it is competing for the financial resources to sustain the world, our nation and our state.

Eight years ago, through the efforts of the UC Irvine CEE Affiliates and ASCE, Orange County became the first county in California to release a comprehensive Infrastructure Report Card. The report card received local and national media coverage and helped focus needed attention on the condition of our infrastructure. One of the main reasons for this level of attention was that the overall Grade Point Average for Orange County's infrastructure was a "C". This was not consistent with the overall image and high quality of life we associate with Orange County. The 2005 report card showed some improvement in Aviation, School Facilities, Transportation and Urban Runoff/Flood Control. The overall grade point average for Orange County's infrastructure went up from a "C" to a "C+" in 2005. This still conveyed a powerful message that even one of the most affluent, desirable places to live in the world is not immune to the effects of deteriorating infrastructure.

Last year, we began a process of reviewing and updating the work that was done on the 2005 Orange County Infrastructure Report Card. We were fortunate to be able to gather many of the same dedicated individuals, as well as some new and energetic industry professionals, to work together to complete the 2010 report card. The result of their dedication and hard work is the updated 2010 edition, released in March of 2010. Energy and Surface Water Quality have been added as important elements of our infrastructure since the last report card in 2005. We have earned an overall GPA of "C+" for 2010, on even par with our 2005 GPA.

Developing the report card is only a first step in highlighting the importance of infrastructure construction and maintenance. As you will see in this report card, the grades are still not all good. Much work needs to be done county-wide to improve the grades and maintain our quality of life in Orange County. Over the next 20 years, growth is expected in Orange County. As we transition from a suburban county to an urban county, the main burden we bear will be upon our infrastructure.

Regardless of economic conditions, it is the responsibility of our engineering community as well as every citizen to understand and work toward improvement. Educating our public on the importance of infrastructure maintenance, encouraging our colleagues in the public sector to continue to seek infrastructure funding and actively communicating to our elected officials the important role that infrastructure plays in our lives are the first and foremost steps to success. The importance of infrastructure in our lives cannot be underestimated. It is key to our quality of life and healthy communities.

Sincerely,

Cindy Miller, PE
President
UC Irvine Civil & Environmental Engineering Affiliates

Introduction

Orange County's Infrastructure: Local Initiative/Local Control Produces Sustainable Results…What Does the Future Hold?

Orange County is a remarkable place. Terrific weather, wonderful quality of life, diverse employment base, a region filled with opportunities for tourism, sports, recreation and entertainment, homes and apartments that meet every need and many great colleges and universities.

What goes unnoticed by many of us is how the public infrastructure facilities around us underpin all of these qualities and make possible everything we do. Our morning showers and morning coffee depend upon a reliable water supply, wastewater treatment system and an electricity delivery system - all provided to our homes with little thought by us. Our drives to the store, bus rides across town, airline flights out of state and rail commutes to downtown Los Angeles are made possible by ground transportation and airport systems that are well planned, well maintained and better funded than most. And yet, congestion slows us down, wastes time and wastes fuel. The intense winter rainstorms we experience during El Nino years normally roll over us with little threat of flooding or property damage. The thousands of tons of trash and recyclables our families and businesses produce every day are safely and reliably whisked away for management and disposal at in-County sites by a remarkably complex system of public agencies and private companies. Our parks, ocean fronts, harbors, waterways, lake fronts and parkways are managed by city and county agencies that provide the people and resources necessary to make them clean, safe and secure. And finally, our public schools facilities 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 maintenance.

How Are We Doing?

While these systems are not perfect, as measured by most National and International standards, Orange County is doing better than most and improving in many areas. The 2010 Orange County report had earned an average grade of C^{+}. By contrast, the American Society of Civil Engineers graded the Nation as a D.

Orange County vs. the Nation

Competent and sustainable public infrastructure requires a few key ingredients: thoughtful planning, well-designed systems, well-constructed facilities, proactive maintenance and reliable funding sources. Local and regional initiatives that are managed by local decision-makers are most likely to be responsive and relevant to the needs of the communities served. What are difficult to manage are

initiatives that require multiple layers of decision-makers or remotely located decision-makers. This is not to say that statewide or national standards aren't important - they oftentimes are - but once in place, the creative and discretionary decision-making of local authorities here in Orange County can be timely and focused.

Orange County's infrastructure is faring better than the rest of the Nation for a number of reasons. First, severe freezing winter weather causes infrastructure to wear and age more quickly. Secondly, much of Orange County's infrastructure is simply younger than what is found in the Mid-West and East Coast. Third, our willingness to provide locally derived funding for the construction or replacement of infrastructure is something we do well here. Passage of Measure M and the Measure M extension of a self-imposed half-cent sales tax by our citizens is testimony that this County is willing to pay for needed infrastructure. The recently completed Groundwater Replenishment System (the World's largest water reclamation plant) is a locally initiated project paid primarily with locally derived funds. Our landfills and water supply systems are in good shape because of long-term investment in them.

Grading Our Public Infrastructure.

During 2009 and early 2010, ten working committees of infrastructure experts employed by public agencies, consulting firms and watchdog groups assembled data and drafted reports on ten infrastructure categories. The condition, capacity and performance of these ten now and in the future were evaluated and assigned grades. Independent review committees read over the reports of the working committees, made comments and editorial changes and adjusted the grades if so warranted. The results for 2010 and the grades from prior years are shown here:

2010 Orange County Report Card

	2002	2005	2010
Aviation	C+	B	B
Energy	-	-	C+
Flood Control and Levees	D	C-	C-
Ground Transportation	C	C+	B-
Parks/Recreation/Environment	C	C	C+
School Facilities	D	C+	C+
Solid Waste	B	B+	B+
Surface Water Quality	-	-	D
Wastewater	C+	C+	B
Water Supply	B	B	B-
OC's Infrastructure GPA	C	C+	C+

www.eng.uci.edu/ocreportcard

Who Pays for Infrastructure?

Public infrastructure is a public asset. We all have a stake in its upkeep and operation, 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.

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 government, more of the cost is borne by local government 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 we unfortunately take on more of a funding burden as the tax dollars we send to the state and federal governments are not finding their way home.

About What Do We Have Most to Worry?

Orange County has three major areas to worry about: water supply and quality, flood control, and electrical supply.

Water Supply and Quality

Most of our water supply is imported from the Colorado River and from the San Francisco Bay Delta. These 240-mile and 715-mile aqueducts, respectively, provide over half of the water we consume. Each has reservoirs along the way, but a major earthquake along either or a failure of the earthen dikes in the San Francisco Bay Delta could mean serious disruptions that would interrupt our water supply. Investment in a reliable conveyance system is essential. The combination of increased beach attendance, tourism, population growth, and urbanization has put a strain on the Orange County waterways and coastline, affecting surface water quality.

Flood Control

The challenge to continuously upgrade and maintain flood control systems, while daunting, is essential to public safety. This challenge has been exacerbated by the recent economic downturn, as flood control engineers attempt to strike a balance between eco-friendly flood control infrastructure, exceedingly stringent regulatory requirements, recreational considerations, and reasonable construction (and maintenance) costs.

Electrical Supply

We cannot live and work without a continuous and long-term power supply. Electrical rate increases, approved by the California Utility Commission, may be adequate to maintain minimum reliability standards, yet will be insufficient to fund the pace of work necessary to replace and upgrade the region-wide and countywide systems on which we depend for a high degree of reliability. As the infrastructure continues to age, the potential exists for less reliable service.

What Can You Do?

Conservation and reuse of our resources are the single most important actions you can take every day. In your home, at work and in your travels, there are always opportunities to minimize waste and to recycle what you do use.

Maintain your understanding of the public infrastructure issues that abound here in Orange County, in California and in the Nation. Stay informed, form an opinion and then regularly express your opinion to the policy-makers and regulators that influence the infrastructure around you. Read print and electronic media. Subscribe to on-line newsletters and your local newspaper. Stay abreast of the major issues under consideration by local, county and state legislators and tell them what you think.

Support well thought out fees and bonds that are proposed for public infrastructure, such as the upcoming water bond. Like everything you own, the reality is that stuff wears out, becomes obsolete or needs to be upsized. Without funding to maintain our infrastructure, the water, roads, electricity and other necessities of daily life may not be there at the moment you need it, or at the quality level you've come to expect.

Think of the vehicles, appliances and electronic devices owned by your own family. All segments of public infrastructure, just like at home, require regular attention and reinvestment. Without it, the high quality of life that we enjoy here in Orange County will diminish.

Understanding Infrastructure Issues

As you read Orange County's infrastructure report card, you may begin to ask what your role is in improving our County's and cities' infrastructure.

Infrastructure is a complex network of public works, which includes roads, bridges, airports, dams, parks, school facilities, and utilities. The rules and practices governing its planning, financing, construction, and upkeep are complex. Whether your interest is to shorten your daily commute, attract new business to your community, or protect the environment for your children, gaining a better understanding of these issues is the first step toward becoming an advocate for infrastructure renewal in your community.

As you read through this Citizen's Guide, think about the following:

Be an informed citizen.

Public officials are emboldened to make tough decisions when there are strong voices of support for their actions. In order to educate public officials about infrastructure needs in your community, you must understand what those needs are. Consider the Infrastructure Report Card. How does our community measure up?

Demand continuous and timely maintenance.

If infrastructure facilities like transportation, water, flood contorl and schools are not kept in sound condition, they cannot support the level of service they are designed to handle. Regular maintenance prolongs use and minimizes the need for costly emergency repairs. The money saved can be used to fund other community priorities.

Think long-term.

Maintaining and renewing Orange County's infrastructure is an ambitious goal. It cannot be achieved overnight. Furthermore, the airports, roads, bridges, wastewater treatment plants, and other facilities built today must serve for decades to come. Comprehensive planning and long-term investment are key to sound decisions about infrastructure.

Consider all the factors influencing infrastructure decisions.

Transportation corridor improvements may displace existing property use or existing natural habitat. New schools or public buildings may increase traffic. New water or wastewater facilities increase electrical demand. These considerations must be understood to make informed public policy decisions.

Do more with less.

Money alone will not solve our infrastructure problems. Solutions to urban problems such as traffic congestion and contaminated water require new technologies and approaches and our personal involvement. Research can help identify more efficient designs and longer-lasting, maintenance-free materials. And, we can change our behavior - using recycling, telecommuting, and mass transit, as examples for reducing the demand on our infrastructure.

Preserve the environment.

To use the Nation's resources most effectively, we must balance environmental and economic goals. Land use and transportation patterns designed to foster economic growth and personal mobility can be developed in harmony with environmental benefits.

Look at the big picture.

Remember that beyond the immediate, individual benefits gained from infrastructure improvements, there are broader community benefits. For example, even though you may not use a new mass transit system, its construction will reduce traffic congestion on local roads, increase nearby property values and support commerce and tourism.

B | Aviation

The aviation demand in Orange County will grow to about 37 million annual passengers in the next 15 years, while the current negotiated passenger limit is only 10.8 million. One solution may be to develop high-speed rail transportation to underutilized regional airports. The condition of John Wayne Airport is excellent.

C+ | Energy

The energy needs of Orange County are served by regional systems involving infrastructure both internal and external to the County. The present state of system reliability is high and the supporting energy infrastructure can be characterized as adequate. However, there is concern that reliability may decline due to limited investment in system upgrades and replacement of aging infrastructure. Usage rates must match the demand for additional funding.

C- | Flood Control and Levees

The backbone flood control and drainage systems serving Orange County, including channels, retarding basins, dams and pump stations, vary widely in condition and capacity to prevent flooding from major storms. Current funding shortfalls for needed upgrades to regional flood control facilities in the County are estimated to be in excess of $2.5 billion.

B- | Ground Transportation

Orange County infrastructure provides bus, rail, highway and freeway systems that move people and goods throughout the region. Improvements are needed to relieve congestion points. Income from Measure M sales tax provides considerable, but insufficient, funding for the capital and operating needs of these systems. Federal, state, local and private sources of funds are essential to building and maintaining an adequate system. High-speed rail is a promising way to meet long-term capacity needs.

C+ | Parks / Recreation / Environment

Between 2005 and 2008, there were improvements in park programs investment that brought the overall grade up from a C to a C+ in 2010. However, the changing economic conditions in 2008-09 stopped 110 projects totaling $70 million dollars in Orange County. And, there is insufficient funding to meet the $680 million necessary for new projects needed in the next five years.

C+ | School Facilities

The condition and capacity of school facilities to serve the needs of Orange County have improved over the past 5 years due to investments available from bond funds. The majority of school districts' enrollment have either decreased or remained constant, easing near-term demand to expand and add new facilities. Deferred maintenance and upgrading of older school buildings continues to be a daunting problem to solve.

B+ | Solid Waste

Recycling and waste diversion are well established and significantly reduce the amount of waste that must be disposed in landfills. The three landfills in Orange County have a combined life of over 40 years. Income from tipping fees and other sources provide a well-funded system of public facilities. Privately owned transfer, recycling and transportation companies provide a well-run and sustainable system.

D | Surface Waters

The combination of increased beach attendance, tourism, population growth, and urbanization have added pollution to urban runoff causing an impact on our waterways and coastline. The County must seek State and Federal support for new water quality projects. In 2008, bond proceeds for projects were frozen due to state budget cuts.

B | Wastewater

The sewer and wastewater treatment systems in Orange County are generally well run and comply with state and federal requirements. Water reclamation is well advanced and additional facilities are planned or underway. Aging portions of the sewer infrastructure system must be replaced, and the funding and planning necessary to do so are being provided. Funding and reserves are generally adequate. User rates must be raised to meet future funding demands.

B- | Water Supply

Orange County's most vulnerable areas of risk are the long-distance conveyance and storage systems that are responsible for supplying most of the water used here. Local planning, construction and maintenance is sufficient and well managed. Water conservation and water recycling are essential ingredients for today's water resources and will be more important in the future.

Aviation

2002	2005	2010
C+	B	B

The ability to meet the growing demand for air transportation service is important to sustain both the local and regional economy and the overall quality of life of residents. The Orange County system of airport infrastructure includes the John Wayne Airport (SNA), Los Alamitos Army Airfield (SLI), and Fullerton Municipal Airport (FUL). General aviation is served by both John Wayne and Fullerton Airports. Los Alamitos Army Airfield is the home base for operations of certain units of the California National Guard and the Army Reserve. Fullerton Municipal Airport has approximately 68,000 general aviation operations annually and, along with JWA, provides the County with all general aviation facility assets.

John Wayne Airport is the most significant with respect to operations because it is the only one of the three Orange County airports that serves commercial aviation operations, although general aviation generates approximately fifty seven percent of John Wayne Airport's take-offs and landings.

Based on a countywide vote, the former Marine Corps Air Station El Toro is not available as a location to accommodate aviation. Capacity is constrained at the John Wayne Airport by the Settlement Agreement. The Settlement Agreement provides the regulatory framework for construction of new facilities to accommodate 10.8 Million Annual Passengers. The Airport Improvement Program (AIP) that provides the facilities is currently underway with scheduled for completion in late 2011.

Within Orange County, demand for commercial air travel will increasingly exceed capacity. The Regional Aviation Plan for the 2008 Regional Transportation Plan (RTP) published by Southern California Association of Governments (SCAG) forecasts the demand for the entire region to be near 165 million annual passengers by the year 2035.

The current RTP assumes high speed regional mass surface transportation systems to move passengers to under-utilized regional airports will be the solution to these capacity shortfalls. The Aviation Infrastructure Working Group thus accepts the fact that, under present prevailing circumstances, commercial aviation demand by Orange County citizens will not be met with Orange County capacity.

Consequently, in this 2009 report card, the capacity criterion for the year 2015 has been applied only to the legal limit of 10.8 million passengers.

The facilities at John Wayne Airport are in excellent condition, with a reported very low dollar value for the backlog of deferred maintenance. Annual expenditures for maintenance and repair are sufficient to sustain the desired facility condition without affecting capacity. Proactive facility maintenance management practices are in existence and have been for several years. Facilities at the Fullerton Municipal Airport are in average condition. The Los Alamitos Airport facilities are in need of significant repair particularly in the area of maintenance and improvements to both runway and operations facilities. All three aviation facilities are operated well within applicable Federal Aviation standards and are in compliance with other environmental and safety standards. Of particular note is JWA's recent record of performance on Federal Aviation Regulation Part 139 Annual Inspection. For the past four years, the Airport has not received a single non-compliance citation.

Public Policy Considerations

The primary infrastructure issue related to aviation is the need to construct the high speed regional mass surface transportation systems between Orange County and the under-utilized and proposed airports in Riverside and San Bernardino Counties specified in the RTP.

Security

John Wayne Airport was one of the first U.S. Airports handling sizeable commercial passenger loads to regain pre-September 11 levels of service. JWA has, as well, been at the forefront of timely compliance with FAA and other Federal initiatives and directives for airlines and airports, post-September 11. An aggressive management philosophy placed the airport in the unique position of achieving Federal Compliance for the installation of Explosive Detection Systems by December 31, 2002. This not only enhances airport security at JWA, but also allows the commercial air traveler to move through the airport and board an aircraft with virtually no delays.

Infrastructure Funding

The cost to maintain the current grade for Aviation is estimated at $500 million over the next five years.

Energy

2002	2005	2010
-	-	C+

The electrical energy infrastructure system for Orange County receives a grade of C+ now, but we forecast a C- in five years. This reflects a concern that reliability may decline due to limited investment in system upgrades and replacement. Prior rate increases approved by the California Public Utilities Commission (CPUC) for Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E) may be adequate to maintain minimum reliability standards, yet be insufficient to fund the pace of work necessary to replace and upgrade the region-wide and countywide systems on which we depend for a high degree of reliability. As the infrastructure continues to age, the potential exists for less reliable service.

Background Information

This is the first time that energy infrastructure has been incorporated into the Orange County Report Card. Orange County's energy infrastructure earns a grade of C+ based on the data compiled for this first report. The present state of our reliability is high, and the supporting energy infrastructure can be characterized as adequate. However, decisions and practices made today are potentially driving the condition of our infrastructure in a negative direction. The pace of replacement and upgrade projects may be insufficient to maintain the high degree of reliability upon which we depend. For this reason, the projected grade forecasted for 2015 is a possible C-.

We have used publicly available information to develop this report, and citations are provided for those who wish to delve further into the details of this topic. Due to National Critical Energy Infrastructure Information (CEII) issues, we have not obtained or used any confidential or overly specific information that would compromise security.

We focused our efforts on assessing those portions of the electric power systems of SCE and SDG&E serving areas of Orange County. We did not assess the condition of the City of Anaheim's electrical energy infrastructure.

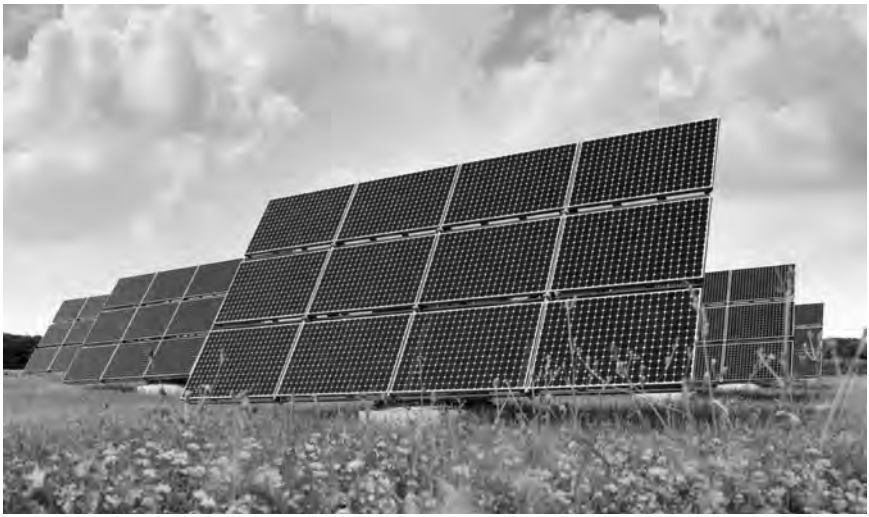
Public Policy Considerations

The range of electric energy infrastructure issues involving Orange County is challenging. There is an extensive network of generation, transmission and distribution facilities often consisting of aging energy infrastructure. SCE and SDG&E, which serve the electrical needs of most of Orange County, are very much aware of the issues and challenges that these systems imply. Decision-making authority that has direct bearing on the future of Orange County is vested well outside of our direct influence and discretionary authority.

The ongoing and future electric energy needs of Orange County are provided not only by the extensive energy infrastructure consisting of transmission and distribution lines within the County, but also by the considerable energy infrastructure external to the County. Electrical production and transmission is provided from well outside of Orange County and is essential to meeting our needs. Both SCE and SDG&E have made significant strides in planning and implementing improvements and continue to do so. In addition to addressing aging existing infrastructure, SCE and SDG&E plan new infrastructure necessary for growing needs and also plan infrastructure improvements such as the new Smart Meter technology. All of these efforts work to the benefit of Orange County, as well as other areas.

In general, our scoring provided lower marks to existing older infrastructure and higher marks for the reliability, planning, and improvements that are underway—but with a very large cautionary note.

The overall grade of C+ indicates that current reliability is high, and some work and progress is occurring to address aging infrastructure issues. However, there is reason for concern based on the trends of relatively low long-term funding and investment, mounting public opposition to infrastructure improvements that involve discernable environmental impacts, and regulatory and mitigation requirements that impede the timely completion of improvements.



Resilience and Security

Infrastructure projects of this type require years of planning, design, environmental evaluation, and regulatory and legal procedures before construction can begin. The first challenge is to forecast needs far enough in advance so that the work can be completed in time. The second challenge is to make the case for sufficient funding to pay for the work.

Infrastructure Funding

SCE and SDG&E each petition the CPUC for rate increases through a General Rate Case (GRC) filing. At any point in time, one or more petitions are typically being processed by the CPUC. The CPUC evaluates the request, publishes its draft findings, sets hearings, conducts them, and then publishes its findings. Vociferous public opposition to rate increases often occurs against the petitioners (SCE or SDG&E), which generally stand alone in making the case for the increase. For this reason, it is essential that local government, business, environmental, and public interest groups provide written and public comment at these hearings expressing support for increased funding to replace aging infrastructure. Orange County has little other influence over the decisions made by the CPUC. Broad-

based public support is the best way to convince the CPUC to grant the increases requested by SCE and SDG&E. These utilities must of course make the case for the rate increases they propose. But once the case has been made, it is essential that broad public and political support be mustered to make the increases a reality on which OC can plan its future.

What You Can Do

The recommended actions that Orange County citizens and businesses must take to ensure that energy infrastructure is adequately maintained are the following:

- Actively support SCE and SDG&E efforts to assess aging infrastructure in Orange County and within the wider regional systems that provide for our electrical power needs.
- Encourage the CPUC to provide additional regulation that would address cost recovery of aging electric infrastructure in a manner to support timely replacement of facilities whose advanced age alone may represent a reliability risk.
- Support clean-burning or renewable energy generation projects in Orange County that will help relieve electric congestion.
- Encourage prospective college students to seriously consider careers in the electric power industry to replace the aging workforce that is nearing retirement age.
- Recognize that any changes in trends will have long lead times. Waiting to act until significant reliability problems actually materialize in aging infrastructure is too late, since any actions to be taken (whether political, social, financial, or otherwise) need to be taken years in advance of when results are to be seen.

In Orange County, the backbone flood control and drainage systems include approximately 260 miles of regional flood control channels (including levees), about 1800 miles of smaller-sized drainage facilities (mostly owned by cities), 15 dams, 11 pump stations, and 34 flood retarding basins. The challenge to continuously upgrade and maintain these systems, while daunting, is essential to public safety.

This challenge has been exacerbated by the recent economic downturn, as flood control engineers attempt to strike a balance between eco-friendly flood control infrastructure, exceedingly stringent regulatory requirements, recreational considerations, and reasonable construction (and maintenance) costs. An example that demonstrates the need to strike a reasonable balance is a recent maintenance project to remove vegetation from a channel to restore its hydraulic capacity. The maintenance work cost approximately $700,000, but the mitigation for this work cost $1,800,000.

Current flood control funding deficiencies in Orange County for regional flood control facilities alone are in excess of $2.5 billion (construction costs only). At the prevailing rate of funding (prior to the economic downturn), it is estimated that it would take over 90 years to upgrade the regional flood control system to a condition and capacity with no deficiencies.

Background Information

Flood control infrastructure is essential for the protection of lives and properties. To that end, the Orange County Flood Control District (OCFCD) and local municipalities (cities) design, construct, and maintain channels, storm drains, retarding basins, dams, and pump stations to reduce the risk of flooding during rain storms.

In normal times, flooding from a rain storm is the furthest thing from the minds of people in the sunny and arid climate of Southern California. Yet hundreds of millions if not billions of dollars worth of property damage could occur and has been recorded in Orange County and elsewhere during catastrophic flooding events. As recently as 2005, a near disaster was averted when a 10-year storm nearly caused a complete breach of a levee in San Juan Capistrano.

Flood control facilities often present a great opportunity for multiple joint uses such as recreation, water conservation, water quality improvement, and environmental enhancement. The challenge facing OCFCD and cities is to identify economically and technically feasible ways to accommodate such opportunities, while providing needed flood control protection.

This report considers the regional backbone drainage system only because such regional flood control facilities provide the primary flood control protection for Orange County. The regional backbone flood control system comprises channels, dams, retarding basins, pump stations, and levees.

Public Policy Considerations

Planning

Because of the limited funds that are available each year for capital improvement projects, the planning and prioritization of flood control projects is done on a countywide basis in conjunction with the City Engineers Flood Control Advisory Committee (CEFCAC). CEFCAC is composed of five City Engineers, each representing a Supervisorial District within Orange County. Each year, CEFCAC meets to prioritize and consider new projects for inclusion in OCFCD's 7-Year Plan. The flood control projects are budgeted for each fiscal year based on this plan. Despite the budgeting of such projects, often the OCFCD is challenged with increasingly restrictive regulatory conditions, which usually delay the implementation of such projects by years.

Resilience and Security

The road ahead to improve Orange County's flood control infrastructure remains difficult, considering the fiscal and regulatory environments. Efforts by the County and cities will continue to identify funding and construct eco-friendly capital infrastructure as well as remove areas in Orange County from the Federal Emergency Management Agency's (FEMA) designated floodplains. Removal of floodplain designations eliminates the requirements for affected property owners to pay federally mandated flood insurance premiums. The FEMA Flood Information Rate Maps (FIRMs) for Orange County were updated in December 2009. As a result, although some areas were removed from the flood plain due to flood control improvements,

other areas were added to the flood plain due to levee systems being decertified as the result of FEMA engineering evaluations of existing structural deficiencies.

Infrastructure Funding

Current flood control funding shortfalls in Orange County, based on budget estimates for regional flood control facilities alone, are in excess of $2.5 billion (construction costs only). With the decline in property values and the resulting decline in OCFCD's property tax revenue, the need for additional sources of funding gains importance to shorten the time needed to upgrade the flood control system. Other sources of funding such as grants from state and federal agencies have been sought with some degree of success. OCFCD can also continue to preserve its limited right-of-way where joint use is possible to develop supplemental revenue streams such as leases.

With the normal design life of flood control facilities being in the range of 50 to 100 years, funding for the future restoration or replacement of these facilities also needs to be considered in determining the overall funding requirements to maintain a 100-year storm capability in each of the regional flood control facilities.

Based on current revenue, it will take over 90 years to achieve our replacement goals! In order to raise the flood control infrastructure grade by one level over a period of five years, it is estimated that it will require approximately $1 billion, or $200 million per year, to fund design, construction, and associated work. This is well in excess of the revenue available to OCFCD each year for capital improvement projects.

What You Can Do

Encourage your local, state, and federal elected officials to increase investment in regional flood control and 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. Investment in flood control infrastructure improvements should always include life-cycle costs as well as design and construction costs.

Ground Transportation

2002	2005	2010
C	C^+	B^-

Orange County's transportation infrastructure provides safe and efficient movement of people and goods. The County has achieved significant improvements in the condition and capacity of its highways, bus system, rail transit, and bridges by the extensive investment paid for by the 1990 voter-approved Measure M, a 20-year, one-half percent sales tax. In 2006, the voters extended Measure M for another 30 years until 2041. This additional funding source will provide significant, though insufficient, funding for future rehabilitation and improvement needs. Forecasted Measure M revenue is significantly less than projected in 2006 because of the drop in sales tax revenue caused by the faltering economy. Additional potential funding sources including, but not limited to, state and federal transportation infrastructure improvement grants, private investment; user fees; and new and adjusted toll revenues will be essential for the long-term sustainability of a system that meets the needs of the County today and in the future. Conventional and high-speed rail projects are essential to provide the capacity required for the long-term sustainability of our economy and quality of life and to provide access to regional airports to supplement capacity over and above John Wayne Airport's annual capacity. Recent federal commitments of funding for high speed rail improvements will benefit Orange County and lead to future development of high speed rail corridors through the developing Anaheim Regional Transportation Intermodal Center (ARTIC).

Background Information

The transportation infrastructure has three components that were evaluated in arriving at the combined grade: highways, transit and bridges, each of which are evaluated with respect to conditions, operation, and capacity.

Highways

For highways and freeways, pavement condition studies conducted in 2006 for highways and in 2008 for freeways determined that the overall condition of pavements in Orange County is good.

Operation of the existing highway system was rated based on existing traffic demand relative to available capacity. This category is a direct evaluation and measure of the benefits received from the Measure M freeway and arterial capacity improvements during the last 20 years and concluded that overall operation of arterials and freeways countywide is marginal to average. This is a far better condition than what would have occurred in the absence of the investments made in these systems.

Present and anticipated future capacity of the highway system considered forecasted population and employment growth and a highway system consistent with Orange County Transportation Authority's (OCTA's) Long-Range Transportation Plan and Renewed Measure M Transportation Investment Plan. This represents a conservative analytical approach and helps to underscore the need for continued city and County efforts above and beyond the Measure M and Renewed Measure M programs. The overall capacity of countywide arterials and freeways is marginal.

Transit

The overall condition and operation of transit facilities is considered to be average to good. The overall capacity of transit facilities is considered to be poor.

For bus transit, the overall performance of the Orange County system is based on the qualitative customer survey conducted by OCTA in 2007. The study found that nearly half of the customers stated they were very satisfied. Almost half of customers said bus service had improved. Customers indicated a preference for more frequent day service and more evening and weekend service. Subsequently, OCTA increased service by 63,300 annual hours (3.4%). Unfortunately, because of falling County, state-derived and federal-derived revenue, OCTA will reduce bus transit service 25% to 30% in 2010 and 2011.

Bus transit operational efficiency is based on boardings per dollar of operating expense. OCTA ranks second among the seven peer agencies selected nationwide, with 0.33 boardings per dollar spent for transit system operation.

Bus transit capacity is based on the amount of service provided versus the County's population, expressed as revenue hours of service per 100,000 population. OCTA ranks 7th compared to the peer group agencies, providing 61,571 revenue hours per 100,000 people. Even at the all-time-high level of service recently achieved, available funding has limited and will continue to limit the capacity of the Orange County bus transit system.

For rail service, there are two segments of the commuter rail infrastructure in Orange County. One is owned by Burlington-Northern Santa Fe (BNSF) Railway and one by OCTA. Both segments were evaluated for overall condition. The OCTA segments are in a good to excellent state of maintenance. The BNSF segments are in an average to very good state of maintenance. BNSF segments are subject to very high levels of freight traffic and thus experience more rapid track wear than the OCTA segments.

The OCTA and BNSF commuter services operate on time 95% of the time. Causes for exceptions to on-time performance are freight train congestion, occasional accidents, and occasional signal and communication system failures. Metrolink and its member agencies, including OCTA, will fully deploy Positive Train Control (PTC) by the end of 2012 to improve train routing efficiency and to prevent train-to-train collisions.

Mid-2010, mainline and terminal station improvements will nearly double train service capacity between Fullerton and Laguna Niguel. Increased through-passenger traffic from Los Angeles to San Diego is constrained by limitations on the BNSF segment west of Fullerton and by the single-track segments south of Laguna Niguel and into San Diego County. Overall, the capacity constraints in Southern Orange County, San Diego County, and Los Angeles County severely limit the potential functionality of this interregional corridor.

The BNSF segments are at or over capacity on peak days. Projected growth in both passenger and freight traffic is driving BNSF and Caltrans to fund incremental expansion of third main track segments between Los Angeles and Fullerton. Uncorrected, the BNSF segments are unable to sustain projected traffic beyond 2010.

Local transportation infrastructure will be improved by the proposed Anaheim Regional Transportation Intermodal Center (ARTIC). The Metrolink train and OCTA bus systems will each gain efficiency. Access to popular tourist attractions and sporting events will be improved and they will, in turn, support the growth of the tourism industry now providing 86,000 jobs in Orange County.

In October 2008, the Orange County Business Council completed a study evaluating the impact of high-speed trains on Orange County jobs. The study concluded that Orange County could gain nearly 23,000 jobs by 2030. High-speed trains will add capacity for passenger and commercial cargo movement by providing efficient long-distance travel to locations in California. Passenger traffic that diverts from air travel to high-speed rail can mean access to more air cargo flights that will add commercial cargo capabilities for "just-in-time" goods movement and overall economic efficiency.

Goods movement through Southern California is a significant challenge. As a region, the five Southern California county transportation commissions (LACMTA, OCTA, SANBAG, RCTC, and VCTC), four Southern California Caltrans districts, and SCAG are funding the "Southern California Multi-County Goods Movement Action Plan." This plan evaluates goods movement issues and strategies for the region as a whole and for each individual county. According to SCAG, the region's need for new goods movement projects during the next 10 years is $30 billion.

Bridges

The condition of bridges in Orange County is very good to excellent. Caltrans has developed the California Bridge Health Index to rate the performance of bridge maintenance and rehabilitation. The Bridge Health Index is a 0–100 numerical rating that utilizes inspection data to determine the remaining asset value of a bridge or network of bridges. The 606 bridges in Orange County earn a Network Health Index (NHI) of 98.8. The state average NHI is 94.0.

Public Policy Considerations

Resiliency

Resilient infrastructure is a component, system, or facility that is able to withstand damage or disruption, and if affected, can be readily and cost-effectively restored. The existing system of arterial highways, freeways and transit systems provides an inherently resilient transportation system. There are two notable exceptions: State Route 91 between Orange County and Riverside County and Interstate 5 between Orange County and San Diego County. For both facilities, improvement work is planned.

Infrastructure Funding

Adequate long-term funding is essential to sustain a balanced multi-modal transportation system, provide near-term relief of highway and freeway congestion, upgrade obsolete bridges, and expand mass transit systems. The public acknowledged this truth in 1990 by approving the Measure M sales tax initiative (one-half percent for 20 years) for funding countywide transportation improvements. In 2006, nearly 70% of voters approved the renewal of Measure M for an additional 30 years beginning in 2011. Also in 2006, voters approved statewide Proposition 1B authorizing $19.9 billion in bonds to assist county and local jurisdictions with transportation improvements.

Because of the 2008 economic downturn, alternate funding sources are now essential to backfill the losses caused by less-than-anticipated sales tax income.

According to the 2006 Orange County Long Range Transportation Plan (LRTP), a long-term investment of $40.9 billion in our transportation system is necessary. A mix of Measure M sales tax revenue; other OCTA revenues; Caltrans funds; Federal Highway Administration and Federal Transit Administration discretionary funds; and funds from Transportation Corridor Agencies, local jurisdictions, and private sources are needed to achieve full funding of the LRTP. A key assumption of the 2006 LRTP was that the Renewed Measure M would provide $11.8 billion. However, less than that is anticipated now because of the economic downturn.

What You Can Do

The single most important thing you can do is support public and private investment in ground transportation planning, construction and management. The Public Policy Institute of California (PPIC) reports that infrastructure funding is one of California's primary challenges and primary needs. All goods and services manufactured, sold, and used here require reliable transportation. Nearly all education, employment, commerce, and leisure activities depend on an adequate transportation system. PPIC concluded that for the foreseeable future, transportation system costs will rise faster than sales taxes and other sources of revenue. In the short term, in fact, overall revenue will decrease and will continue to do so until a growth economy returns and persists.

Tell your elected officials that it is imperative that the County seek federal grants such as American Recovery and Reinvestment Act (ARRA) funds to supplement Measure M sales tax income. Further, our US Senators and Representatives must support the reauthorization of the federal Transportation Act, SAFETEA-LU and it must contain provisions for projects here in Orange County.

Since 2005, Parks, Recreation, and Environment (PR&E) has seen improvements in the investment of park programs and parklands that have brought the overall grade up from a C to a C+ in 2010. Due to the passage of Park Bond Acts and per capita allocations from Propositions 12 and 40, there has been a flurry of activity related to park rehabilitation and development statewide. However, the 2008/09 economic recession means the outlook for PR&E for the next five years will change.

Due to the changing economic conditions in 2008/09, the state issued a "stop work order" in December 2008 that required every contractor or grantee working on projects funded with state bond dollars to stop work. This had a devastating effect on conservation projects throughout the state. In fact, $2.274 billion in funding was halted affecting 3,271 projects statewide. Orange County had 110 projects totaling $70 million dollars frozen.

Because of seriously changing cultural and economic conditions, getting children outdoors is a growing challenge, which cannot be met with a once-a-year field trip to the out-of-doors or by watching nature programs on television.

Background Information

According to a Gallup poll taken in 2009, for the first time in 25 years, Americans say that the economy takes precedence over the environment because of overwhelming personal financial worries, unemployment, and restricted budgets. Yet, according to a market research study commissioned by the California Park and Recreation Society in March 2009, "98% of California households report having visited a park or participated in a program during the past year and two in every three households did so at least once in the past month." With the state's unemployment rate of 11.0% (2.0 million individuals) and Orange County's unemployment rate of 8.3% (261,000 individuals), access to recreation areas and local programs is essential.

Regardless of the current economic trends, in the long term "to protect public lands for future generations, all segments of the population need to be engaged and have a sense of ownership," says George McDonald, who coordinates the National Park Service's Youth Programs.

Public Policy Considerations

The Economy

Economically, there has been good news and bad news. On the positive side, from 2005 through 2008, funding for parks and park programs increased significantly. Voters approved several propositions in 2000 and 2002 totaling $4.7 billion, with roughly one third of it earmarked for urban recreation projects and allocated on a per capita basis to local jurisdictions. These funds began flowing into parks and park programs after the 2005 Report Card was completed. On the negative side, however, the 2008-2009 state budget was cut by over $18 billion and the 2009-2010 budget by $8.6 billion. In June 2009, Governor Schwarzenegger proposed cutting $143 million of General Fund support to the California Department of Parks and Recreation - an 86% decrease in support, which would have meant closing 220 of the state's 270+ state park units. This brought a significant public outcry; in the two weeks after the proposal came to light, 36,000 individuals sent more than 90,000 letters to the Governor and legislators. In the end, the Governor only took $14.2 million from Parks and Recreation. Additionally, in August 2009, there was an increase for state park day use and camping fees to help cover some of the costs of running the parks.

Wildfires

Since 2005, Orange County has endured two of the most catastrophic wildland fires in its history. These are due in part to a statewide drought, increased development in the wildland urban interface, and more highly flammable vegetation. Plant communities are changing significantly due to the frequency and intensity of wildfires. What were once hillsides covered with an "elfin forest" are now grasslands with weedy, flammable non-native species dotted with a few native oak or walnut trees.

Infrastructure Funding

To accurately reflect the stewardship needs of the surveyed park facilities, each category respondent was asked to provide an estimated dollar figure to meet capital needs over the next five years. These results are broken down by park type as follows:

National Forest	$100.0 million
State Parks & Beaches	88.0 million
County Parks, Beaches & Facilities	31.1 million
Municipal Parks, Beaches & Facilities	462.5 million
Land Reserves & Conservancies	n/a
Special District Parks & Facilities	0.2 million
Total	$681.8 million

What You Can Do

Support the following at the local and county levels:

- Secure Consistent Funding – Develop consistent funding streams from all funding sectors to ensure that projects can be implemented and maintained and develop "programmatic mitigation" methods for more effective use of funds that derive from transportation and other major infrastructure projects.
- Expand Public Awareness – Broaden and strengthen the public's understanding of natural/cultural values that will help protect our resources for the future and result in a more physically and psychologically healthy populace and collaboratively plan, support, and enhance educational opportunities through nature centers, outdoor education programs, and ranger programs such as Orange County Wild.
- Expand Experiences in Nature – There is a need for programs to bring more consistent personal, hands-on experiences in nature that will instill a lifestyle change for young people and thus an enhancement to both humans and the natural environment.
- Update Policy Approaches – Policies and plans to protect natural areas and the overall environment need to be reviewed/changed. Land use policies and development standards must recognize the changes needed to protect both people and the environment from climate changes and fire disasters. All interested parties should participate in collaborative planning opportunities such as Integrated Watershed Management Plans and the Orange County Green Vision Project.

Since the 2005 survey, Orange County school infrastructure has improved. The majority of school districts' enrollment have either decreased or remained the same, which has allowed districts with the financial resources an opportunity to deal with issues such as deferred maintenance and modernization.

The credit for this improvement goes largely to the districts and their constituents. Districts countywide have aggressively pursued a wide range of financing sources, including state and local bond monies, developer fees, and private financing. The continuing success of local bond measures since the 2005 Report Card has substantially enhanced the districts' ability to safely and effectively house and educate their student populations. In addition, state voter-approved modernization funds have been available for qualifying districts.

Unfortunately, not all districts have been successful in increasing their financial capacity. Failed local bond issues and the inability to provide matching funds for state aid have resulted in continued infrastructure deterioration in these districts. Moreover, there is still much work to be done countywide, even in those districts that have successfully floated bonds and captured available state aid, to bring Orange County school infrastructure to a higher grade. The following case studies demonstrate the ongoing need for physical and programmatic improvements to Orange County's school infrastructure.

Background Information

Case Studies

Case Study #1
Irvine Unified School District:
The Irvine Unified School District (IUSD) operates 23 elementary schools, 5 middle schools, 4 comprehensive high schools, 1 continuation high school, and 8 support facilities, totaling over 2 million square feet of building space on nearly 500 acres of land. They serve over 26,000 students in grades K through 12 in the City of Irvine.

IUSD's facilities are in above average to excellent condition. The majority of their schools were constructed in the late 1960s/early 1970s. IUSD has not passed a local general obligation bond, but it is proactive in pursuing a variety of funding sources that can be used to maintain, modernize, and construct their facilities. In addition to being a successful participant in the state's School Facility Program, additional funding sources include Community Development Block Grants (CDBG), parcel taxes, Community Facilities Districts (CFDs) funding, developer Mitigation Agreements, and lease revenues.

IUSD has historically budgeted an average of $1,500,000 annually for maintenance and repair. However, with the current state budget crisis and the decrease in deferred maintenance funds, IUSD may experience a decline in the level of maintenance they are able to complete. Paving, roofing and heating, ventilating, and air conditioning are the building components that are most likely to be adversely affected. For example, in lieu of replacing an entire aging roof, IUSD will only patch and repair specific areas.

IUSD has made a "Green" commitment. Their most recently completed new elementary school, Stonegate Elementary, was designed and constructed to Collaborative for High Performance Schools (CHPS) standards resulting in additional funding from the state. In the last 18 months, IUSD has diverted 56% of its waste from landfills through the successful implementation of recycling and waste diversion programs.

Case Study #2

Huntington Beach Union High School District:

In 2004, voters in Huntington Beach, Fountain Valley, and Westminster passed Measure C, providing the Huntington Beach Union High School District with much needed funding to improve conditions at the District's nine schools. The Facilities Master Plan was promptly implemented in 2005 and is near completion in 2009. All nine schools have benefited from extensive new construction and/or modernization of current facilities. New classroom and science buildings, locker room buildings, infrastructure upgrades, and key modernization projects have been completed and are now successfully serving the District's 16,000+ students.

The District's commitment to additional deferred maintenance funding has allowed more of the Measure C Scope D (optional) work to be performed than planned one year ago. This has allowed the District to continue to modernize facilities, rehabilitate pavement, and continue the replacement of gym and PE locker facilities. This funding has also allowed the replacement of air conditioning at select campuses; data cabling; and new pre-engineered shelter/shade structures. This additional work will continue into 2010.

General Findings

Orange County's school infrastructure was assessed from five perspectives: (1) condition; (2) capacity; (3) cost/operation; (4) resiliency/security; and (5) sustainability. Additionally, the status of security at Orange County schools was generally assessed; however, because of the sensitive nature of such security issues, the Working Group has evaluated security on a strictly "pass-fail" basis.

Since the 2005 survey, the Orange County school infrastructure has remained the same in the categories listed above. Districts have successfully continued to maintain their facilities in an average to slightly above average condition. Capacity has improved because enrollments have begun to level out and, in some cases, shrink.

This allows districts to plan for the removal and/or replacement of old modular classrooms. A number of new schools have been constructed to meet increased enrollment in areas that have experienced increases (counter to the trend). While costs have increased, a variety of school fund augmentation measures have helped meet cost demands – for example, state and local renovation and new construction funding, private infrastructure financing through Community Facilities Districts (CFDs), school mitigation fees, and mitigation agreements. Funding for maintenance and operations, however, has stayed fairly level, resulting in a fairly high level of deferred maintenance. School facility bond monies are restricted in types of expenditures and cannot be used for routine maintenance and operations expenses.

However, Education Code Section 17070.75 requires that all school districts who receive state funds under the Lease Purchase Program (LPP) or the School Facilities Program (SFP) establish a 3% Routine Restricted Maintenance Account (RRMA) within the school district's general fund for ongoing and major maintenance of school buildings. While this requirement has benefited school districts' Deferred Maintenance Programs, the current state budget for the next five fiscal years reduces the amount that districts are required to set aside to 1%. The budget allows for "categorical flexibility," allowing districts to move funding from one categorical program (e.g., class size reduction, special education, adult education, Title 1, transportation, child development and preschool) to another according to local priorities. The Deferred Maintenance Program is one such categorical program, so funding is subject to this flexibility. Thus, the maintenance of school facilities is expected to decline in the next five years as districts are faced with deepening budget cuts in favor of educational programming priorities.

Capacity

Most school districts have faced growing enrollment for the last two decades. In 1996 and 1997, many school districts serving elementary students adopted class-size reduction programs for some or all of grades K through 3 in order to address individual student needs and provide an increased quality of teaching. However, when school

districts experienced student population growth concurrently with a decrease in student class sizes, this growth resulted in a greater demand for classrooms. In most recent years, because there has been a wave of enrollment decline, the pressure to add permanent and modular classrooms has decreased slightly, and the opportunity may exist for school districts to reduce the number of modular classrooms on playground space. However, other factors may weigh in the decision to remove modular space, such as projected enrollment decreases that have not yet manifested, costs of demolition and playground restoration, and district master planning that may repurpose rather than remove the modular units.

Sixty percent (60%) of districts that responded to the survey have begun to incorporate sustainable design criteria into their new construction and modernization projects. Sustainable design criteria aim to reduce the overall impact of the built environment on human health and environment through design, construction, operation, and maintenance that focuses on increasing the efficiency of resources—energy, water, and minerals. Two organizations provide rating criteria to guide districts in implementing sustainable design: Collaborative for High Performance Schools (CHPS) and Leadership in Energy and Environmental Design (LEED). Districts that have not begun to incorporate sustainable design cited that it was either too expensive or that they do not have current projects.

Public Policy Considerations

The key issues to consider are:

- Continue to improve the financing of maintenance to remove the existing approximate $300 million in deferred maintenance;
- Develop programs and financing mechanisms to meet increasing legal/regulatory requirements for accessibility, safety, and quality educational programming.
- Regional education of the general public as to existing school conditions, the mechanics of school district financing, and the need for additional funding to bring school infrastructure to a level of excellence.

Resiliency and Security

District administrators have generally ranked security measures as "satisfactory," even though isolated security incidents have occurred at various schools. Approximately 70% of the districts reported their facilities meeting all security requirements.

Infrastructure Funding

The school districts estimate the cost of deferred facilities maintenance at approximately $175 million and spend over $50 million in routine maintenance of their schools. Given that roughly half of the County's school districts responded to the survey, the actual dollar value of deferred facilities maintenance within County school districts is probably over $525 million. It is further estimated that over $1 billion is needed to bring the School Facilities grade to a "B."

In addition to local bond issues, Orange County school districts have been apportioned $630 million in Modernization projects and $908 million in New Construction from State Propositions 47, 55, and 1D. However, in December 2008, California's fiscal crisis prompted the halt of disbursing cash from the state's Pooled Money Investment Account (PMIA), which is utilized by the Office of Public School Construction (OPSC) to fund Modernization and New Construction projects approved by the State Allocation Board (SAB). It is unknown when the state funding freeze will end, making it difficult for districts to plan and to begin their construction projects.

What You Can Do

- Support the financing of school infrastructure programs at local, regional, and state levels.
- Provide volunteer service to school districts on infrastructure and facility committees.

Solid waste infrastructure provides an essential public service to the citizens and businesses of Orange County. The method of solid waste management involves three integrated components. All three components work together to make the solid waste management system work effectively. The first is the collection of residential, commercial, and industrial waste. The second is processing of the waste to remove recyclable materials from the waste stream. The third is disposal of the residual waste into three landfills. The first two components are usually performed by private industry and sanitary districts under franchise agreements with the cities or occasionally by cities with publicly operated collection systems, while the third component is performed by the County of Orange. This citizen's guide includes an evaluation methodology and findings described in the Issue Brief Report.

Orange County is meeting the 50% diversion mandate of California's AB *939*, and its landfills produce gas that is recovered and used to generate electricity and fuel public transportation buses.

Orange County's three existing landfills have a combined remaining life of over 40 years. The remaining life span could potentially increase, as plans are underway to expand the landfill disposal capacity and conservation initiatives become more pervasive and efficient.

Background Information

The statutory driving force behind Orange County's solid waste infrastructure is California's landmark legislation known as AB *939*, the Integrated Waste Management Act of *1989*, which requires each city, county, and regional agency to divert 50% of all solid waste from disposal through source reduction, recycling, and composting activities by January 1, 2000.

In the past 20 years since passage of AB *939*, the solid waste infrastructure in Orange County has evolved into a robust waste management system. Local government, in partnership with waste management companies, has surpassed the mandate of AB *939* by

implementing various programs that help residents and businesses reduce and recycle the waste generated. Waste management begins at the source by providing residential and commercial waste and recycling and collection service. Timely and regular collection of the waste and recyclables ensures our neighborhoods, parks, and businesses are kept clean and free of litter, vector propagation, and odor generation.

Once the waste and recyclables are collected, recyclable loads are transported to Materials Recovery Facilities (MRFs) for further processing whereby the recyclables are removed from the waste stream, bailed, and shipped to factories to be manufactured into new commodities. These facilities are equipped with state-of-the-art sorting and conveyor systems to maximize the separation of recyclables from the waste stream. A number of green waste facilities are also located throughout the County that convert yard waste into nutrient-rich compost and mulch products that can be used to enrich landscaped areas in our local communities.

Disposal of harmful and/or illegal waste into our local landfills and environment is monitored and controlled at "waste stream" check points throughout the County. The waste stream is scanned at these check points and the undesirable waste materials are removed and disposed of properly. The County also maintains four Household Hazardous Waste Collection Centers strategically located throughout the County available to residents to properly dispose of household hazardous waste free of charge. Working together, solid waste stakeholders have provided a system that accommodates the proper disposal of prohibited waste and reduces the amount of residual waste buried at the landfills.

Any residual waste not processed at the MRFs or green waste facilities is disposed in one of three Orange County landfills. In addition, residential and commercial loads that contain very little recyclable content are directly hauled to the landfills. Once at the landfill, waste is placed in a series of layers within a controlled environment that includes liners, gas collection systems, and groundwater monitors.

Orange County's three existing landfills have a combined remaining life of over 40 years. The remaining life span could potentially increase, as plans are underway to expand the landfill disposal capacity. The implementation of additional recycling programs will further decrease the amount of waste disposed at the landfills.

Once buried, the waste generates landfill gas, which can be harnessed for beneficial reuse. The County's landfill gas collection systems generate enough electrical energy to meet the annual power requirements of approximately 14,000 homes. Plans are underway to construct another electrical generation plant using landfill gas that will supply power to an additional 24,000 homes. In addition, a generating electrical energy, landfill gas is also converted to liquefied natural gas (LNG), which is used to fuel public transportation vehicles.

Public Policy Considerations

AB *939* gave local government the responsibility to reduce the amount of solid waste being disposed in our landfills by 50%. Potential new legislation by the state may increase the required solid waste diversion rate to 75%. Additional new legislation is also 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. New legislation and regulations will provide new challenges and will place additional responsibilities for managing and reducing our solid waste stream on local government, the community, and private industry. Under the AB 32 (Global Warming Solutions Act) Scoping Plan, a number of Recycling and Waste Management issues, including Mandatory Commercial Recycling, have been identified as contributing to significant greenhouse gas emissions reductions. The target of the mandatory commercial recycling measure is to reduce between 2 and 3 million tons per year of waste disposal.

The goal of reducing our future waste stream is to extend the effective life and capacity of the County's existing private and public facilities. As we reduce the amount of waste entering our waste management infrastructure system we will also reduce the amount of revenue available to develop and maintain our solid waste infrastructure. The costs associated with operating and maintaining these facilities are "fixed costs." That is, the cost of operating and maintaining the solid waste infrastructure is essentially independent of the amount of waste available to the system. Additional revenue sources, including fee increases, will be required as we become more successful with conservation and management. Recycling, energy production and new fees structures may provide the additional funds required to support the required operational, maintenance and development costs.

Recommendations

There are a number of ways that Orange County can continue to enjoy the benefits of a well-run waste management and waste recycling program:

- Continue monitoring emerging technologies for potential implementation as an alternative to landfills and to extract energy from materials that cannot be easily recycled.
- Continue to encourage government, retailers, and manufacturers to implement extended producer responsibility policies and practices.
- Support development of additional recycling facilities to divert reusable resources from landfills.
- Continue educating the public on the value of recycling and the proper disposal management of household hazardous waste, e-waste, and household medical waste.
- Fully implement energy recovery from landfill gas to reduce dependency on fossil fuels.
- Continue taking steps to combat global warming by reducing the carbon footprint, being more energy efficient, and incorporating "Green Building" practices.

- Ensure adequate revenue sources to maintain existing level of service and fully fund all liabilities for now and generations to come.

Resilience

Orange County's solid waste infrastructure is an integrated system that is built upon the partnership between local and county government and private waste management companies. The collective efforts of the waste industry result in a seamless process dedicated to meeting the service needs of Orange County residents and businesses while protecting public health, safety, and the environment. Multiple facilities and multiple players provide a robust system and market that insures long-term sustainability and competency.

Infrastructure Funding

The cost to maintain the current "B+" grade is estimated at $480 million per year. Primary funding for the management, development, and processing of solid waste is accomplished through user fees. Public and political support for appropriate fee increases has become a fairly well-accepted practice in Orange County. Continued widespread support from business, environmental, and public interests will ensure Orange County's future.

What You Can Do

The most important action that you can take in your home or in your business is to reduce waste in the first place. Look for products with minimal use of packaging. For example, limit your use of bottled water and emphasize the use of counter-top or under-sink water treatment to improve the taste of the water you drink. Shift from hard copy communications and reports to electronic versions. Recycle solid waste and encourage others to do so. Shop and trade with the stores, restaurants, and organizations that pay attention to the products and packaging they use.

You can find additional information by visiting www.wastefreeOC.com

Pacific Ocean views and sand and surf are iconic images of Orange County. The area's warm Mediterranean climate and miles of beaches, streams, and creeks offer year-round water recreational opportunities. These benefits, along with the more than 60,000 acres of wilderness parks and open space lands, attract more than 25 million tourists annually.

Beaches are a hot spot for sunbathing and surfing, while inland tourist destinations include hiking and biking trails as well as numerous theme and water parks. Revenues generated by visitors substantially impact the region's economy. The County's pristine beach properties are some of the most desirable and have the highest real estate values in the country.

The combination of increased beach attendance, tourism, population growth, and urbanization has put a strain on the Orange County waterways and coastline, affecting surface water quality.

Orange County has eight Clean Beach Initiative (CBI) projects underway, including urban runoff diversions and innovative treatment plants intended to reduce bacterial levels.

Seeking support for additional water quality projects continues to be a challenge. In 2008, bonds for CBI projects were frozen due to state budget cuts.

Background Information

In 2002 and 2005, surface water quality was graded as urban runoff within the flood control chapter. For the first time, this important public policy matter is addressed as a separate issue. Orange County streams and beaches are the outlet for urban runoff carrying pollutants. During dry weather periods, urban runoff from excess irrigation, car washes, drained swimming pools, and illicit discharges are routed through the storm drain system to coastal waters and waterways. Combined in previous report cards, Urban Runoff (now

'Surface Water Quality') and Flood Control are separated into different categories in this report card to correctly evaluate their respective goals and purposes.

With urbanization, increased impervious surfaces in the form of roofs, parking lots, driveways, roads, and highways decrease the amount of open space available for the infiltration and percolation of rainfall into the ground. Runoff carries pollutants, sediments, and litter accumulated from the urban areas and non-point sources directly to the ocean. Poor water quality can threaten public health and may have severe economic consequences for businesses dependent on the beaches.

Public Policy Considerations

The objective of improving surface water quality in Orange County is to safeguard public health, the environment, and the economy. Population growth, especially along the coast, has contributed to an increase in urban runoff that flows into the creeks and rivers. Urban runoff is believed to be the prime cause of beach pollution. Untreated urban runoff carries bacteria and viruses directly to the beaches and ocean.

Today an enormous amount of time and funding is invested in water quality monitoring, reporting, and project implementation to protect our coastal waters. Dry-weather-period water samples at the coastal waters were analyzed for fecal coliform, total coliform, and enterococcus. Monitoring data from Orange County is compiled each year by Heal the Bay for its Annual Report Card on the health of California beaches. The worst beaches for high indicator bacteria levels were reported on the 2009 Heal the Bay's Top 10 Beach Bummer list in California. Two Orange County beaches received an overall grade of "F." Doheny Beach at San Juan Creek was listed as No.10, and Poche Beach was ranked No.7.

Overall, there have been dramatic improvements over the past summers, 99 of 103 monitored Orange County beaches scored A's on Heal the Bay's 2009 California End of Summer Beach Report Card

with data collected from Memorial Day through Labor Day. Three other beaches received B's, making Orange County a standout performer in the state this past summer.

Community planning can make an impact in reducing runoff and pollutants discharged into our coastal waters. Integrating Low Impact Development (LID) practices designed to restore predevelopment runoff patterns to new and existing development designs can generate less surface runoff and less pollutants transported to the downstream waters.

Community response to water conservation efforts will also help alleviate urban runoff issues. Water-saving irrigation practices and landscape techniques can reduce dry-weather runoff. Local water districts have developed programs to encourage and provide incentives to implement residential landscaping water conservation practices, such as use of drought-tolerant plants, permeable paving, rain barrels, and cisterns. Individual actions and lifestyle habits in simple day-to-day

activities can also have a positive water quality impact. Maintaining vehicles to eliminate fluid and oil spills; avoiding overuse of fertilizers and pesticides; and ensuring proper disposal of paint, motor oil, and chemicals will significantly decrease urban runoff and pollutants flowing to the beach outlets and improve the County's overall surface water quality.

Infrastructure Funding

With the goal to protect and restore the health of California beaches, the State Water Resources Control Board has provided funds through the Clean Beach Initiative (CBI) to improve water quality of California's most polluted beaches. Orange County has eight CBI projects including urban runoff diversions and innovative treatment plants intended to reduce bacterial levels. Seeking support for additional water quality projects and Best Management Practices (BMPs) continues to be a challenge. In 2008, bonds for CBI projects were frozen due to state budget cuts.

What You Can Do

Community response to water conservation efforts will help alleviate urban runoff issues. Water-saving irrigation practices and landscape techniques can reduce dry-weather runoff. Local water districts have developed programs to encourage and provide incentives to implement residential landscaping water conservation practices, such as use of drought-tolerant plants, permeable paving, rain barrels, and cisterns.

Individual actions and lifestyle habits in simple day-to-day activities can have a positive water quality impact. Maintaining vehicles to eliminate fluid and oil spills; avoiding overuse of fertilizers and pesticides; and ensuring proper disposal of paint, motor oil, and chemicals will significantly decrease urban runoff and pollutants flowing to the beach outlets and improve the County's overall surface water quality.

Wastewater

2002	2005	2010
C+	C+	B

Well-managed and fully funded wastewater collection and treatment systems are essential to sustaining our quality of life and ensuring the long-term economic vitality of our communities. Protecting public health and the environment and extending the useful life of our wastewater management infrastructure must remain a top priority in today's complex society. In Orange County, wastewater is managed by over 30 special districts and city departments that are responsible for one or more of the steps necessary to collect, treat, and dispose or reuse 250 million gallons per day.

Since the completion of the 2005 Orange County Infrastructure Report Card, sewage spills have continued to decline and our beaches remain among the cleanest in California. The beaches in Orange County are national treasures used by millions of tourists and inland residents and must be protected from all forms of human pollution.

There are rare but significant events that have occurred since the last report card. A power failure at a North County agency caused a large sewage spill into the Santa Ana River that closed the nearby beaches for several days. Two large sewage spills occurred at one South Orange County agency when pumping equipment failed. In both cases, each agency evaluated the root cause of the spills and made appropriate improvements to prevent a similar future occurrence.

Wastewater flows continue to decrease in spite of a growing countywide population. The effects of water conservation, a multiple-year drought, and our recent economic recession have all contributed to the lowest average daily wastewater flows in more than 20 years.

Wastewater treatment plants throughout the County have faced ongoing rehabilitation and upgrades to improve their condition and to meet increasingly stringent effluent quality standards. The Orange County Sanitation District and the Orange County Water District completed the world's largest water reclamation plant using microfiltration and reverse osmosis to produce contaminate-free water suitable for groundwater recharge and direct non-potable uses.

In spite of lower flows and a lack of wet-weather-related problems seen in prior decades, the condition of the collection system continues to be a lingering concern. Significant collection system construction took place during the post World War II building boom of Southern California. Many sanitary sewers built in the late 1940s and early 1950s have reached their original design service life. As their condition deteriorates, these older sewers are more prone to root intrusion, offset joints, debris and grease build-up, and site-specific failures that can cause sewer spills. For these reasons, sustained funding must be continued to support ongoing remote inspections, maintenance, rehabilitation, and replacement of the collection systems.

It is estimated that over $3 billion is needed during the next 10 years here in Orange County to fund the various local and regional rehabilitation projects to maintain and improve systems from current levels up to a good, but not excellent, condition.

Public involvement is an important ingredient in a well-run wastewater management system. Some cities and agencies are using web-based systems to communicate with their citizens about the critical importance of wastewater infrastructure and sewer maintenance programs.

Background Information

Wastewater treatment and water reclamation facilities have historically received greater attention than collection systems (sewers) and are in better overall condition as a result. State and federal regulations, including the California Porter Cologne Act and the Clean Water Act administered by the Environmental Protection Agency and the two California Regional Water Quality Control Boards that regulate Orange County have held local agencies to increasingly stringent standards and comprehensive regulations. Environmental organizations, business groups, and the general public have consistently supported funding.

Since 1972, evolving state and federal regulations have required increasingly stringent effluent quality standards, improved staffing levels, better operator training and certification, better maintenance

practices, and improved long-range planning and capital projects. This has yielded increasingly reliable operation of the systems serving Orange County.

In 2002, the Orange County Sanitation District's Board of Directors, with considerable insistence by the public to do so, committed over $2 billion to upgrade the two regional facilities serving north and central Orange County over the following ten years. Major capital improvement programs also occurred at the other wastewater management agencies serving portions of central and south Orange County.

Wastewater collection systems and pump stations must now meet state-mandated minimum standards. Previously, financial and operational attention was not consistently provided to many sewer systems in Orange County. This has significantly changed during the last five years.

Since 2006, all cities and wastewater collection agencies in the County have been required by the state to adopt and execute "Sewer System Management Plans" that implement measures to reduce sewage spills and mitigate the impacts of sewage spills if they occur. As a condition of these state-approved plans, collection system owners must evaluate the capacity of their systems and provide adequate capacity where needed. They are absolutely obligated to inspect and rehabilitate aging sewers as necessary; adopt and enforce ordinances requiring private property owners to maintain their own sewers; and ensure long-range planning, staff development, and funding mechanisms sufficient to operate, maintain, and improve their systems. System condition assessments are required to guide short- and long-range rehabilitation plans and related financial needs.

Many old sewage pump stations located throughout the County do not meet current design standards and experience significant performance problems due to a lack of replacement parts and backup systems. Other ongoing problems include corrosion, mechanical wear, pump and pipe clogs, and equipment obsolescence. This means increased replacement and rehabilitation costs and increased maintenance needs for these critical assets to extend their useful lives and meet daily performance

needs. But breakdowns occur in these aging systems. Work continues to rehabilitate and replace these systems, but it will be years before the systems have all been fixed.

All of the cities and agencies in Orange County now have enterprise funds dedicated to the single purpose of managing the operations, maintenance, and replacement of their sewer collection systems as a matter of professional practice or to comply with state-mandated standards.

Public Policy Considerations

Beyond the state-mandated standards and practices enumerated above, the successful operation of the wastewater collection and treatment systems in Orange County requires the innovative regional approaches and cooperative projects that are routinely used today by Orange County's agencies. These alliances benefit residents and ratepayers as financing and funding become more challenging. Benefits include improved economies of scale, sharing the most advanced technologies, and leveraging city and agency expertise to solve current and future issues. For instance, a regional sewer collection agency group provides educational workshops and certified training programs for staff that benefit large and small agencies alike.

Resilience and Security

Intense rainstorms, power failures, and earthquakes are the events that threaten the reliable operation of wastewater management systems. Hard rain events are a potential source of inflow and infiltration in sewer systems that are not properly designed and maintained. This can overwhelm the system with excessive flow that causes sewage spills. Lengthy power failures can cause pump stations to fail if backup generators are not available. Earthquakes cause the most damage to systems that are not designed to modern standards.

Orange County systems are generally more resilient to these conditions than in the past because of the significant investment made during the last 10 years. For instance, a series of back-to-back rainstorms

experienced in the winter of 2010 caused no excess flow conditions. In the past, rainstorms of this intensity and duration would have caused localized problems with sewer spills.

With respect to security, the operating agencies in Orange County restrict entrance into their wastewater treatment facilities and securely lock their remote pump stations to limit vandalism and acts of terrorism. Cameras and remote-sensing equipment are used to monitor vulnerable areas.

Infrastructure Funding

Funding to operate, maintain, and construct the facilities needed to convey, treat, and dispose or reuse the approximately 250 million gallons of wastewater that are produced every day in Orange County comes primarily from user fees. Some agencies receive a small amount of property tax income, but the amount has decreased over time because of actions taken in Sacramento during annual budget negotiations.

All of these agencies have well-established sufficient authority to enact and collect user fees. They are, in fact, mandated by the state to do so through the "Waste Discharge Requirements" it adopts for each of them. It is, therefore, required and expected that the decision-makers that oversee these agencies adopt fees that are sufficient to meet their foreseeable operating and capital needs.

State and federal grant and low-interest loan programs for the construction of collection system and treatment plant infrastructure are unpredictable, spotty, complicated, and subject to delay. They have been insufficient to meet the collective needs of Orange County. The grants and loans are usually paid on a reimbursement basis and are frequently delayed because of chronic budget shortfalls in Sacramento. For this reason, it is prudent for wastewater management agencies to secure loans through other means such as bonds and certificates of participation.

It is estimated that over $3 billion is needed during the next 10 years here in Orange County to fund the various local and regional rehabilitation projects to bring systems from current levels up to a good, but not excellent, condition.

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 it in a trash can. FOG coalesces to form clogs in your service lateral and in the public sewers of your community. FOG is the single most important cause of sewage spills in Orange County.

Imported water provides about 50% of Orange County's water needs. Imported water is delivered from the Colorado River through the Colorado River Aqueduct and from Northern California through the State Water Project. The dependability of these supplies directly influences the reliability of water service to consumers in Orange County. Orange County is continually improving its local programs for developing, storing, treating, and delivering water to consumers. However, Orange County's supply reliability has been impacted by challenges to imported water sources from outside our boundaries - and well outside our political and financial influence.

The Colorado River system has suffered through nine years of drought and reservoir storage has declined to about 50% of capacity. The Colorado River system is oversubscribed, and California faces continuing competition from neighboring states for the system's resources. The Metropolitan Water District of Southern California (Metropolitan) has been successful in developing additional supplies through cooperative transfers and exchange agreements to the extent

that in 2009, the Colorado River Aqueduct will carry about 92% of its capacity into Southern California. Into the future, Metropolitan will have to remain especially vigilant as environmental issues, climate change, and competition threaten long-term reliability.

Supplies from the State Water Project face more uncertainty than the Colorado River supplies do, primarily because of challenges in the Sacramento-San Joaquin River Delta (Delta) system including insufficient upstream storage, inadequate conveyance, wastewater discharges into the system, vulnerable Delta levees, endangered species, invasive species, institutional complexity, regulatory and legal decisions, and others. The Delta's ecosystem is not sustainable in its current form. A time horizon of 15 to 20 years will be needed to implement a "Delta fix" once one is agreed upon. This is the single greatest threat to the long-term interests of the citizens and businesses of Orange County.

Recent legal decisions and federal regulations, known as biological opinions, put in place to protect threatened fish species in the Delta have allocated more and more water to fish and other environmental needs and have restricted the times of the year when water can be pumped to supply agricultural and urban needs. The availability of imported water from the State Water Project to all of its users has been reduced by about 40% (about 800,000 acre-feet per year). This has reduced Orange County's overall water supply by about 10% or approximately 70,000 acre-feet per year.

Another new and not fully understood challenge is climate change. Our growing awareness of natural and human causes of climate change has improved our understanding of the potential impacts on water supply—but large uncertainty remains. The length of this drought cycle is impossible to predict. In the distant past, California's drought cycles have lasted dozens and even hundreds of years.

Background Information

Orange County water retail agencies (cities and local districts) deliver about 228 billion gallons of water each year (about 700,000 acre-feet) to residents and businesses within the County. North and central

Orange County is about two-thirds dependent on groundwater pumped from the Orange County Water District Groundwater Basin, whose primary source is the Santa Ana River, and about one-third dependent on water imported from the Colorado River and Northern California. The south Orange County area is almost entirely dependent on water imported into the County, although recycling, groundwater supplies, and an ocean water desalter are being developed.

Our water infrastructure received an overall grade of B-. While the County's water infrastructure is in good to excellent condition, it will require continuing investments for repair or replacements to keep it in top shape. However, the lack of water supply reliability from outside the region for our imported supplies has currently emerged as an overwhelming issue and has caused a major downgrading from our prior report until it is resolved. Mandatory conservation ordinances have been adopted by nearly all retail water agencies through the fall of 2009. This helps but is insufficient given the trends listed above. The well-worn phrase, "a perfect storm" precisely describes our desperate situation.

Public Policy Considerations

Since the 2005 Report Card, we have identified several priority tasks that must be accomplished to address the risks that threaten us. These include the following:

- Ensure that supplies continue to flow from the State Water Project and the Colorado River.
- Achieve effective agreement on a long-term management fix of the Bay-Delta region.
- Build additional local projects for recycled water, groundwater desalination, and ocean water desalination.
- Maintain our high-quality public water supply by diligently monitoring for and treating for any newly determined contaminants of concern in local or imported water supplies used in Orange County.
- Insist that consumers and businesses use water as efficiently as possible. Water use efficiency is the quickest method of bringing on new "sources" of water.

Resilience and Security

In 2010 and beyond, Orange County must continue to focus on several aspects of water infrastructure to maintain service reliability and to prevent any slippage of the grade. These include:

Maintain Aging Facilities: Though much of our water infrastructure was built within the last 45 years, it will deteriorate and fail at an increasing rate without appropriate investments and planning now. Water agencies must apply proactive maintenance and repairs, including corrosion prevention.

Develop Local Water Supplies: Imported water supplies will always be at risk from adverse water rights reallocations, drought, and contamination. For instance, because Metropolitan no longer has unrestricted access to surplus Colorado River water and the State Water Project is currently in its third year of drought, it implemented a water rationing program on July 1, 2009. Fortunately, Orange County water agencies have begun new initiatives to develop new local supplies. The

Groundwater Replenishment System (GWRS) became operational in 2008 and is now supplying 72,000 acre-feet of water to the groundwater basin. The GWRS will be expanded in the near future to provide even more water. Water recycling, ocean water desalination, and increased water-use efficiency are other possible ways currently under consideration to increase local water supplies.

Retail agencies in Orange County have adopted Water Conservation Ordinances to encourage and mandate reduced water usage. Water-budget-based tiered water rates are being evaluated by a number of agencies. Experience has shown that these rate structures reduce water waste by the highest water users and save the retail entity as much as 20% of overall water use.

Water Quality: Nearly all agencies have expressed concern about possible contaminants in imported and local water sources. We can detect more and more elements at lower and lower concentrations. This gives us more awareness and understanding about what is in the water but we oftentimes do not have the corresponding understanding of the effects so we can act appropriately. Metropolitan must continue to seek water quality improvements in the water delivered through the Delta. It will cost more to provide safe water if and when new contaminants of concern are identified and managed.

System Reliability: Since the last report card, major projects have started construction or design. They will improve system reliability to portions of Orange County that depend heavily on imported water delivered through two major pipelines and one regional filtration plant. These projects include stabilization and seismic strengthening at the Diemer Filtration Plant by MWD, construction of the Irvine interconnections to send water from North Orange County to South Orange County during emergency situations, construction of the 750-acre-foot Upper Chiquita Reservoir, and design of the New Baker Filtration Plant to treat and deliver water to South Orange County. All of these projects will become operational in 2010 or 2011.

Seismic Retrofit: The 2002 Report Card recommended that most retail agencies conduct seismic evaluations of their facilities to meet current standards and protect water supply from a catastrophic earthquake. Many have completed these surveys and some have completed improvements. The remaining work must be completed.

Security: Water agencies were required under federal statute to complete a confidential vulnerability assessment in 2002 or 2003. Most agencies have implemented between 50% and 100% of the suggested improvements.

Infrastructure Funding

Orange County must invest nearly $2 billion over the next ten years to maintain the local infrastructure. Funding to complete a Delta 'fix,' depending on the selected option, will likely require from $10 to $20 billion. It is difficult to estimate how much this will cost Orange County because the costs will be spread between the federal and state governments and water users.

What You Can Do

Water conservation is vital to the long-term interests of California and Orange County. Water use in your home, neighborhood, city, and place of employment all have an incremental impact on water demand. Educate yourself about the possibilities of saving water and then act so that your actions and those around you match what is possible. Every drop counts is more than a catch phrase.

Closely study the issues about water here in Orange County and California. Water reclamation, water conveyance, water storage and water allocation are real and on-going public policy matters that impact you and your family. Sitting back and letting others decide these matters is a mistake. Read, develop an informed opinion and then express it where you can. The opportunities to be heard are nearly endless. Watch the news, get on e-bulletins like BC NEWS, www.bcwaternews.com/cawaternews, and stay abreast of what is happening all around you. And act. It is not an exaggeration to say that the future of California and Orange County depends in large part on what happens in the next ten years on water policy.

Community Hospital Infrastructure In Orange County: A Status Report

The ability of hospitals to keep pace with infrastructure improvements is influenced by a variety of factors, including growing community demand and the nature of that demand, trends in patient care (such as the increasing use of outpatient or ambulatory surgery services and the need for more ICU beds with an aging population), seismic retrofit requirements, and financial and economic considerations. In recent years, studies on efficient hospital design and how hospital design influences patient healing have influenced new hospital construction, and hospitals that have been financially able to seismically retrofit their facilities have done so. Most recently, however, capital decisions have been significantly impacted by the ongoing credit crisis and the nation's faltering economy.

More than a quarter of hospitals statewide saw interest expenses increase in the first quarter of 2009, while many others were frozen out of the credit market entirely. In addition to the challenges of accessing capital, hospitals have seen increases in uninsured patients with consequent increases in bad debt and charity care. This has come at a time when hospitals are burdened with the unfunded seismic mandate estimated at $110 billion statewide. In Orange County 23 of our 32 hospitals are required to meet seismic mandate deadlines of 2013 or 2015. It is estimated that one hundred hospitals statewide will fail to meet their seismic deadlines.

The Hospital Association of Southern California (HASC), the County of Orange, and CalOptima partnered in 2007 to commission the Orange County Healthcare Infrastructure Study to ascertain the extent to which hospital capacity in the county would be sufficient to meet the needs of our growing population. This study was released in early 2008. Hospitals reported expansion plans projected to take place over the next decade. At that time, notwithstanding that hospitals expected to add 567 net beds to their inventories and assuming that service levels stay the same, the total coverage shortfall across the county was projected at 549 beds in 2015. To put this number in perspective, Orange County hospitals are licensed for a total of approximately 6,000 beds and 4,800 of these are "set up", or staffed and currently serving patients.

Other findings:

- Significant variations in hospital facility distribution current exist across the county; however, data represented in the study showed a positive correlation between facilities and population.
- There are only three trauma centers in Orange County; two of these are located in central Orange County.
- ICU is the only bed type well covered through 2015.
- Psychiatric and outpatient bed shortfalls are the highest areas of shortfall in 2010 and 2015.
- No additions of the following bed types are planned during the next decade: Pediatric Intensive Care Unit (PICU), burn, trauma stations, psychiatric, rehab, or skilled nursing.
- The communities of Irvine, Costa Mesa, and Newport Beach will see population increases of nearly 47 percent between 2000 and 2015. This area of the county will experience the highest bed coverage shortfalls over the next 10 years according to existing service levels, as population growth eclipses projected hospital services expansion.
- Hospitals reported deferred or delayed expansion plans due to financial constraints, seismic mandates, nurse/physician shortages, and delays in state approvals.

Orange County residents clearly value the presence and availability of hospitals and emergency rooms in their communities. In late 2005, the Orange County Business Council and Cal State Fullerton Center for Public Policy conducted a survey wherein 89 percent of Orange County residents rated hospitals and emergency rooms to be "very important" to Orange County – even higher than schools, drinking water, roads, streets, and highways.

Not mentioned earlier but significant to the ability of hospitals to keep pace with growing demand is the public policy and regulatory environment. The shape of health care reform will determine whether costs can be adequately covered while coverage is expanded, and this in turn will determine the ability of hospitals to remain economically viable and to secure the capital they need to meet the demands of our growing community.

Methodology

Overall Report Card Objective

To build widespread support and understanding regarding the importance of public infrastructure facilities, systems, and their impact on the quality of life and economic vitality in Orange County.

Organizational Structure

The Report Card was developed through the efforts of three committee levels. The committee members are listed in a separate section of this guide.

The Infrastructure Working Committees consisted of technical experts in the field – including both public and private sector participants. Each committee developed the detailed methodology for its specific category, collected and evaluated the data, prepared its section of the "2005 Report on Orange County's Infrastructure", and assigned the initial grade.

The Review Councils were comprised of leaders in the public sector, consultant/private industry, academia, and the environmental community. Their responsibilities were to review and evaluate the findings of the Working Committees, and to establish public policy considerations for each infrastructure category.

The Executive Committee was responsible for organizing and guiding the overall Report Card effort.

Development of Report Card Grades

In the development of Report Card Grades, four fundamental components of the infrastructure were considered:

Condition

What is the existing or near future condition of the infrastructure facility? In assessing the condition of the infrastructure, the immediate future conditions (up to three years) included improvements funded or in design.

Capacity

Are the current facilities able to support the current population? Will the existing and planned (funded) facilities be able to support the community in ten years? The existence of Master Plans, Funding Plans, and Capital Improvement Programs were key factors in the capacity assessment.

Operations

The Working Committees each developed parameters applicable to their areas. Key issues were: Is the specific infrastructure system complying with existing regulatory requirements? Do the organizations have sufficient funding for facility maintenance.

Security

Does the infrastructure element provide adequately for preparing for, or responding to, natural or manmade, (e.g. terrorism) disasters?

Weighting Factors and Grading Criteria

The weighting factors applied by each working committee are described in their report, using the four categories listed above. The Orange County Report Card effort follows the ASCE National Report Card's approach based on the following scale:

A	=	90-100%
B	=	80-89%
C	=	70-79%
D	=	41-69%
F	=	40% or lower

Executive Committee

	Name	Title/Affiliation
Co-Chairs:	Blake Anderson, PE	President, Blake Anderson Consulting
	Jan Scherfig, PE	Professor Emeritus, UC Irvine, CEE Department
Members:	Bill Bennett, PE	Senior Vice President, HDR Engineering
	Steve Bucknam, PE	President, Bucknam & Associates
	Terry Hartman, PE	Vice President, Community Infrastructure, Irvine Company Community Development
	Bev Perry	Assistant Director, Bedrosian Center on Governance, USC
	Dr. Wallace Walrod	Vice President of Economic Development and Research, Orange County Business Council
	April Heath	Administrative Specialist, UC Irvine, CEE Department
Liaison w/CA ASCE:	Kenneth Rosenfield, PE	Past President, ASCE Orange County Branch
National ASCE:	Robert Bein, PE	Chairman Emeritus, RBF Consulting
Editing, Format and Production	Deanna Rose	Technical Editor, HDR Engineering
	Faye Stroud	Creative Director, RBF Consulting
	Tracy Sanchez	Consolidated Reprographics

WORKING COMMITTEES

Aviation

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	Larry Serafini	Deputy Airport Director, County of Orange, John Wayne Airport
Members:	Kash Hadipour	Vice President, National Aviation Lead, Kleinfelder
	Eric Mimoso	Airport Engineer, County of Orange, John Wayne Airport
	Ambi Thurai, PE	Senior Professional Engineer, County of Orange, John Wayne Airport
Program Manager:	Steve Bucknam, PE	President, Bucknam & Associates

Energy

Co-Chairs:	Quang Vu, PE	President, Dahl Taylor & Associates, Inc.
	Ali Yari	Director, Electric T&D Engineering, San Diego Gas & Electric
Members:	Bob Woods	Manager, Distribution Engineering, Southern California Edison
	Richard Sheaffer, PE	Principal Engineer, Electric T&D Engineering, San Diego Gas & Electric
Program Manager:	Terry Hartman, PE	Vice President, Community Infrastructure, Irvine Company Community Development

Flood Control & Levees

Co-Chairs:	Terry Hartman, PE	Vice President, Community Infrastructure, Irvine Company Community Development
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Members:	Mike Granada, PE	Project Engineer, OC Public Works
	Ziad Mazboudi	Senior Civil Engineer, City of San Juan Capistrano
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	Kevin Onuma	Manager, Flood Control Division, OC Public Works
	Mehdi Sobhani, PE	Manager, Flood Control Programs, OC Public Works
Program Manager:	Terry Hartman, PE	Vice President, Community Infrastructure, Irvine Company Community Development

Parks/Recreation/Environment

Co-Chairs:	Jean Watt	Friends of Harbors, Beaches & Parks
	Bev Perry	Assistant Director, Bedrosian Center on Governance, USC
Members:	Pilar Alcivar-McCoy	Recreation & Human Services Manager, Community Services, City of Garden Grove
	John Beauman	Council Member, City of Brea
	Pete Bonano	Deputy Fire Marshal, Orange County Fire Authority
	Ilse Byrnes	State Trails/Greenway Foundation
	Susan Brodeur, PE	Coastal Engineer, OC Public Works
	Mark Denny	Director, OC Parks
	John Graves	Director, Planning & Field Operations, Irvine Ranch Conservancy
	David Pryor	California State Parks, Orange Coast District
	Melanie Schlotterbeck	Conservation Clarity
Program Manager:	Jan Scherfig, PE	Professor Emeritus, UC Irvine, CEE Department

School Facilities

Co-Chairs:	Charlene Yarnall	Principal, PJHM Architects
Members:	James Bucknam	Associate, A4E
	Melanie Houk	Senior Counsel, LENNAR
	Justin Powers	Associate, Bucknam & Associates
	Mike Whipple	President, MF Whipple & Associates
Program Manager:	Steve Bucknam, PE	President, Bucknam & Associates

Solid Waste

Co-Chairs:	Kevin Kondru, PE	Deputy Director, Central Region, OC Waste & Recycling
	Sonia Nasser, PE	Vice President, Sustainable Infrastructure Planning, Bryan A. Stirrat & Associates
Members:	Susan Collins	Director, Southern California Practice, R3 Consulting Group
	Sue Gordon	Vice President, Environmental & Public Affairs, Rainbow Disposal
	Bert Palmer, Ph.D., PE	Vice President, Geosyntec Consultants
	David Ross	Senior District Manager, Waste Management, Inc.
	David Tieu	Civil Engineer, OC Waste & Recycling
Program Manager:	Bill Bennett, PE	Senior Vice President, HDR Engineering

Surface Water Quality

Co-Chairs:	MaryAnne Skorpanich	Director, OC Watersheds Program, County of Orange
	Garry Brown	Executive Director & Coastkeeper, Orange County Coastkeeper
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	Richard Boon	Stormwater Program Manager, County of Orange
	David Hunt, PE	Senior Vice President and Chief Operating Officer, Willdan Engineering
	Ann Mesa	Civil Engineering Assistant, County of Orange
	Joe Parco	Water Quality Engineer, City of Santa Ana
	Ken Susilo, PE	Prinicipal, Geosyntec Consultants
Program Manager:	Jan Scherfig, PE	Professor Emeritus, UC Irvine, CEE Department

Transportation

Co-Chairs:	Bob Kallenbaugh	Chief Executive Officer, RBF Consulting
	Paul Taylor	Deputy CEO, Metropolitan Transportation Authority *(Formerly of Orange County Transportation Authority)*
Members:	Jim Beil	Deputy District Director, Caltrans District 12
	Kia Mortazavi	Director of Development, Orange County Transportation Authority
	Darrell Johnson	Director of Transit Project Delivery Orange County Transportation Authority
	Hamid Bahadori	Principal Transportation Engineer/ Senior Policy Analyst, Automobile Club of Southern California
	Les Card	Chief Executive Officer, LSA Associates, Inc.
	Bo Burick	Vice President, RBF Consulting
	Gary Warkentin	Vice President, RBF Consulting
Program Manager:	Bill Bennett, PE	Senior Vice President, HDR Engineering

Wastewater

Co-Chairs:	Nick Arhontes	Director, Operations & Maintenance & Regional Services, Orange County Sanitation District
	Zeki Kayiran	President, AKM Consulting Engineers
Members:	Jay Elston	Utilities Operations Supervisor, City of San Clemente
	Brennon Flahive	Environmental Compliance Administrator, South Orange County Wastewater Authority
	Brent Hayes	Sanitation Supervisor, Garden Grove Sanitary District
	Mike Lynch	Wastewater Supervisor, City of Newport Beach
	Patrick McNelly	Principal Staff Analyst, Orange County Sanitation District
	Diann Pay	Principal Engineer, AKM Consulting Engineers
	Greg Springman	Collection System Manager, Irvine Ranch Water District
Program Manager:	Blake Anderson, PE	President, Blake Anderson Consulting

Water Supply

Co-Chairs:	Bill Mills	William Mills & Associates
	Greg Heiertz, PE	Director of Planning, Irvine Ranch Water District
Members:	Matt Collings	Assistant Director of Engineering, Moulton Niguel Water District
	Jeff Dunn	Senior Project Manager, Stantec Consulting
	Steve Esmond, PE	California Water Division Manager, KBR Engineering
	Cindy Miller, PE	Vice President, RBF Consulting
	Karl Seckel	Associate General Manager, Municipal Water District of Orange County
Program Manager:	Blake Anderson, PE	President, Blake Anderson Consulting

REVIEW COUNCIL

Aviation

Members:	Jan Mittermeier	Senior Vice President, Operations, Cofiroute USA, LLC., 91 Express Lanes

Energy

Members:	David Mead	Vice President, Engineering and Technical Services, Southern California Edison
	Dave Geier	Vice President, Electric Transmission and Distribution, San Diego Gas & Electric

Flood Control & Levees

Members:	William E. Lawson	Consulting Civil Engineer
	Brian Moore	Deputy District Engineer, LA District, U.S. Army Corps of Engineers

Parks/Recreation/Environment

Members:	Angie Avery	Recreation & Community Services Director, City of Los Alamitos
	Debbie Cook	Past Huntington Beach Mayor and City Council Member
	Claire Schlotterbeck	Executive Director, Hills for Everyone
	Bill Thomas	President, California Association of Parks and Recreation Commissioners and Board Members, Board Member, San Clemente Beaches, Parks & Recreation Commission

School Facilities

Members:	Dr. Gwen Gross	Superintendent, Irvine Unified School District
	Lynn Hartline	Deputy Superintendent, Orange County Board of Education

Solid Waste

Co-Chairs:	Michael Giancola	Director, OC Waste & Recycling
	Bryan A. Stirrat	President, Bryan A. Stirrat & Associates
Members:	Laith B. Ezzet	Senior Vice President, Hilton Farnkopf & Hobson
	Patti Henshaw	Program Manager, Orange County Environmental Health, Solid Waste Local Enforcement

Surface Water Quality

Members:	Roger Mallett	Executive Director, Newport Bay Naturalists & Friends
	Gonzalo Vasquez	Water Quality Engineer, City of Cypress

Transportation

Members:	Peter Buffa	Member, Board of Directors, Orange County Transportation Authority
	Sarah Catz	Director, Center for Urban Infrastructure
	Wally Kreutzen	City Manager, City of Irvine

Wastewater

Members:	Garry Brown	Executive Director & Coastkeeper, Orange County Coastkeeper
	Gerard Thibeault	Executive Officer, California Regional Water Quality Control Board, Santa Ana Region

Water Supply

Members:	Thom Coughran, PE	Water Resources Manager, City of Santa Ana
	Kevin P. Hunt, PE	General Manager, Municipal Water District of Orange County
	Michael Markus, PE	General Manager, Orange County Water District
	Mike Rudinica, PE	Executive Vice President, RBF Consulting

UC Irvine Civil and Environmental Engineering Affiliates

The UCI Civil and Environmental Engineering (CEE) Affiliates provide support and guidance to the Department, its programs and students. It acts as an interface between the professional civil and environmental engineering community in Southern California (particularly Orange County) and the University. The CEE Affiliates include senior executives representing leading civil and environmental engineering firms (both large and small) and public agencies, as well as individual members.

Benefits include the creation of numerous opportunities for its members:

- affiliation with Orange County's only major research university
- maintenance of strong industry/university relations
- distinction of "making a difference" in the development of Civil and Environmental Engineering at UCI
- quarterly seminars and social/student functions
- technical interaction and collaboration with faculty and students
- student recruitment through early contact with top students
- guidance to student projects
- guest speaking opportunities in classes and at student society meetings
- student scholarships

Member annual dues are used to support laboratory and equipment needs, program enhancements in the Department, support of ASCE, ITE, and Chi Epsilon student chapters, student scholarships, and CEE Affiliate meetings and functions.

For more information, contact the Department of Civil and Environmental Engineering, at www.cee.affiliates@uci.edu

ASCE Orange County Branch

The American Society of Civil Engineers enhances the welfare of humanity by advancing the science and profession of engineering.

The Society 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 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.

Founded in 1852, ASCE has more than 125,000 members worldwide and is America's oldest national engineering society. The Society is currently celebrating its 150th anniversary.

The local Orange County Branch of ASCE was formed in 1952. The branch has over 1600 members, publishes a local newsletter, and meets on a monthly basis. Information on branch activities is available at: www.asceoc.org or (714) 258-8390.

Promoting Countywide Economic Prosperity

The Orange County Business Council (also known as OCBC and the Business Council) is the leading business organization in Orange County, California.

Orange County Business Council represents and promotes the business community, working with government and academia, to enhance Orange County's economic development and prosperity in order to preserve a high quality of life. To accomplish its mission, OCBC is focusing on its core initiatives:

- Infrastructure: Increase investment in construction, management and maintenance of Orange County's infrastructure integral to the long-term economic vitality of the county and region.
- Workforce Development: Lead the business community's efforts to ensure a high quality workforce that supports the growing technology-based workplace.
- Workforce Housing: Increase the supply, choices and affordability of housing available for a growing Orange County workforce.
- Economic Development: Create a full spectrum of jobs to improve the economic well-being and quality of life for Orange County.

For more than 100 years, OCBC and its predecessor organizations have ensured Orange County thrives and its voice is heard at the regional, stae and national levels. When Orange County thrives, the state thrives, the nation thrives.

OCBC member businessess emply over 250,000 workers in Orange County and 2 million worldwide. Members join an elite group of business leaders, representing the best and the brightest in the county.

www.ocbc.org

References

Only the main references are listed here. The detailed comprehensive references for each individual area are listed in the relevant section of the "2010 Report on Orange County's Infrastructure – Issue Briefs"

2010 Report on Orange County's Infrastructure – Issue Briefs
Civil & Environmental Engineering Affiliates,
UC Irvine March 2010

2005 Report on Orange County's Infrastructure – Issue Briefs
Civil & Environmental Engineering Affiliates,
UC Irvine October 2005

The above reports are available from the Department of Civil & Environmental Engineering, UC Irvine. Irvine CA, 92697

or on the WEB site:

www.eng.uci.edu/civil
www.eng.uci.edu/ocreportcard

2009 Report Card for America's Infrastructure
American Society of Civil Engineers
March 25, 2009

Renewing America's Infrastructure – A Citizen's Guide
American Society of Civil Engineers
1015 15th Street, N.W. Suite 600
Washington, DC 20005

The above reports are available from ASCE at 1015 15th Street, N.W. Suite 600, Washington, DC 20005

or on the WEB site:

www.asce.org/reportcard

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